Degenerate Roots of Three Transcendental Equations Involving Spherical Bessel Functions

By Robert L. Pexton and Arno D. Steiger

Abstract. Roots of the three transcendental equations

$$j_l(\alpha\lambda)y_l(\lambda) = j_l(\lambda)\,y_l(\alpha\lambda),$$

$$[xj_l(x)]'_{x=\alpha\eta}[xy_l(x)]'_{x=\eta} = [xj_l(x)]'_{x=\eta}[xy_l(x)]'_{x=\alpha\eta},$$

and

$$[j_l(x)]'_{x=\alpha\mu}[\,y_l(x)]'_{x=\mu} = [j_l(x)]'_{x=\mu}[\,y_l(x)]'_{x=\alpha\mu}$$

that are degenerate for certain values of the parameter $\alpha \in (0, 1)$ are presented. The symbols j_l and y_l denote the spherical Bessel functions of the first and second kind. Root degeneracies are discussed for each equation individually as well as for pairs of equations. Only positive roots are considered, since the equations are invariant under the transformations $\lambda \longrightarrow -\lambda$, $\eta \longrightarrow -\eta$, and $\mu \longrightarrow -\mu$. When $l = 0$, only the third equation has nontrivial roots. These roots are identical with the roots of the first equation for $l = 1$, i.e. $\mu_{0n} = \lambda_{1n}$ $(n = 1, 2, \dots)$. Various graphs of λ_{ln}, η_{ln}, and μ_{ln} display root-degeneracies as intersections of curves. Accurate values of degenerate roots with the corresponding values of α are exhibited in tables.

Roots of the third equation for $l = 1(1)15$, $n = 1(1)30$, $\alpha = 0.1(0.1)0.7$, together with their minima and associated values of the parameter α, are given in the microfiche supplement accompanying this issue. Roots of the first and the second equation and minima of roots of the second equation are published in v. 31 and v. 32 of this journal.

The roots of the first two equations determine the eigenfrequencies of the transverse electric and the transverse magnetic normal modes of an ideal cavity resonator bounded by two concentric spheres $(r = \alpha R$ and $r = R)$. The roots of the third equation determine the frequencies of the irrotational magnetic eigenfields.

In [1] roots of the transcendental equations

(1) $$j_l(\alpha\lambda)y_l(\lambda) = j_l(\lambda)y_l(\alpha\lambda)$$

and

(2) $$[xj_l(x)]'_{x=\alpha\eta}\,[xy_l(x)]'_{x=\eta} = [xj_l(x)]'_{x=\eta}\,[xy_l(x)]'_{x=\alpha\eta},$$

where j_l and y_l denote spherical Bessel functions of the first and second kind, are presented. In [2] these roots are analyzed as functions of the continuous real param-

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eter α, where $0 < \alpha < 1$. The roots of (1) and (2) determine the eigenfrequencies of the transverse electric and the transverse magnetic normal modes of an ideal cavity resonator bounded by two concentric spheres ($r = \alpha R$ and $r = R$). While the normal modes constitute a complete set of eigenvectors for the expansion of an electromagnetic field in the isolated cavity, they no longer are a complete set of basis vectors if the cavity is coupled to a source of electromagnetic energy. In order to obtain such a complete set, it is necessary to add irrotational electric and magnetic multipole fields to the solenoidal fields of the normal modes. The characteristic frequencies of the irrotational electric multipole fields are also determined by Eq. (1). The characteristic frequencies of the irrotational magnetic multipole fields, however, are determined by the roots of the transcendental equation

$$(3) \qquad [j_l(x)]'_{x=\alpha\mu} [y_l(x)]'_{x=\mu} = [j_l(x)]'_{x=\mu} [y_l(x)]'_{x=\alpha\mu}.$$

Roots of Eq. (3) were calculated by the procedure described in [1] and are presented in the microfiche supplement. The ranges of the parameter α, of the order l of the spherical Bessel functions, and of the root index n are $\alpha = 0.1(0.1)0.7$, $l = 1(1)15$, $n = 1(1)30$. The minima of the roots of Eq. (3) are also presented in the microfiche supplement and were computed in the same way as the minima of Eq. (2) were calculated in [2].

Since

$$j_l(ze^{m\pi i}) = e^{ml\pi i}j_l(z),$$
$$y_l(ze^{m\pi i}) = (-1)^m e^{ml\pi i}y_l(z), \qquad (l, m = 0, 1, 2, \ldots)$$

[3, p. 439, 10.1.34, 10.1.35], the equations (1), (2), and (3) are invariant under the transformations $\lambda \longrightarrow -\lambda$, $\eta \longrightarrow -\eta$, and $\mu \longrightarrow -\mu$, respectively. Therefore, only positive roots need be considered. The roots of Eqs. (1), (2), and (3), namely λ_{ln}, η_{ln}, and μ_{ln}, are labelled by the index $n = 1, 2, \ldots$ such that $\lambda_{ln+1} > \lambda_{ln}$, $\eta_{ln+1} > \eta_{ln}$, and $\mu_{ln+1} > \mu_{ln}$. For $l = 0$, Eqs. (1) and (2) have no nontrivial solutions when $0 < \alpha < 1$. This is obvious, since for $l = 0$ they can both be reduced to the form

$$\tan(\alpha\lambda) = \tan \lambda.$$

Furthermore, Eq. (3) for $l = 0$ is identical with Eq. (1) for $l = 1$,

$$\mu_{0n} = \lambda_{1n}, \qquad n = 1, 2, \ldots.$$

For particular values of the parameter α certain roots of the equations (1), (2), and (3) coincide. The following types of root degeneracies are considered

$$
\begin{aligned}
\lambda_{ln}(\alpha) &= \lambda_{l'n'}(\alpha), & (l, n) \neq (l', n'), \\
\eta_{ln}(\alpha) &= \eta_{l'n'}(\alpha), & (l, n) \neq (l', n'), \\
\mu_{ln}(\alpha) &= \mu_{l'n'}(\alpha), & (l, n) \neq (l', n'),
\end{aligned}
$$

(4)

and

$$\lambda_{ln}(\alpha) = \eta_{l'n'}(\alpha),$$

(5) $$\lambda_{ln}(\alpha) = \mu_{l'n'}(\alpha),$$

$$\eta_{ln}(\alpha) = \mu_{l'n'}(\alpha).$$

The graphs, Figures 1 through 4, which show the dependence of various roots λ_{ln}, η_{ln}, and μ_{ln} on the parameter α, exhibit as intersections of curves some of the root degeneracies (4) and (5).

Write Eqs. (1), (2), and (3) as

(1') $$F_l(\alpha, \lambda) = 0, \quad \text{where } F_l(\alpha, \lambda) = j_l(\alpha\lambda)y_l(\lambda) - j_l(\lambda)y_l(\alpha\lambda),$$

(2') $$G_l(\alpha, \eta) = 0, \quad \text{where } G_l(\alpha, \eta) = s_l(\alpha\eta)t_l(\eta) - s_l(\eta)t_l(\alpha\eta),$$

$$s_l(x) = xj_{l-1}(x) - lj_l(x), \qquad t_l(x) = xy_{l-1}(x) - ly_l(x),$$

and

(3') $$K_l(\alpha, \mu) = 0, \quad \text{where } K_l(\alpha, \mu) = v_l(\alpha\mu)w_l(\mu) - v_l(\mu)w_l(\alpha\mu),$$

$$v_l(x) = j_{l-1}(x) - \frac{l+1}{x}j_l(x), \qquad w_l(x) = y_{l-1}(x) - \frac{l+1}{x}y_l(x).$$

If p_{ln} or q_{ln} represent any one of the roots λ_{ln}, η_{ln}, and μ_{ln}, and if P_l or Q_l represent any one of the functions F_l, G_l, and K_l, then the algorithm used to compute degenerat roots can be stated as follows:

Step 1. Input values for l, n, l', n', α, $\Delta\alpha$, $p_{ln}, q_{l'n'}$, Δp_{ln}, $\Delta q_{l'n'}$, ϵ, dd, t, where p_{ln}, $q_{l'n'}$ and α are approximations for the desired degenerate root and the associated value of the parameter. The approximations can readily be obtained from the graphs or the root tables.

ϵ error tolerance for $|p_{ln} - q_{l'n'}|$

dd coefficient used to decrease $\Delta\alpha$

t determines the sign of $\Delta\alpha$. Initially $t = 1$.

Step 2. With the current value of α compute new values of p_{ln} and $q_{l'n'}$ such that

$$P_l(\alpha, p_{ln}) = 0 \quad \text{and} \quad Q_l(\alpha, q_{l'n'}) = 0.$$

Step 3. Test the new roots. If $|p_{ln} - q_{l'n'}| < \epsilon$, we have our desired degenerate root and associated value α.

Step 4. Otherwise, if $(p_{ln} - q_{l'n'})t < 0$, then $-t \rightarrow t$ and $dd\Delta\alpha \rightarrow \Delta\alpha$.

Step 5. $\alpha + t\Delta\alpha \rightarrow \alpha$. Return to Step 2.

A FORTRAN program implementing this algorithm computes values of the degenerate roots (4) and (5) together with the associated values of α to near machine accuracy. Results are presented in Tables 1 through 6.
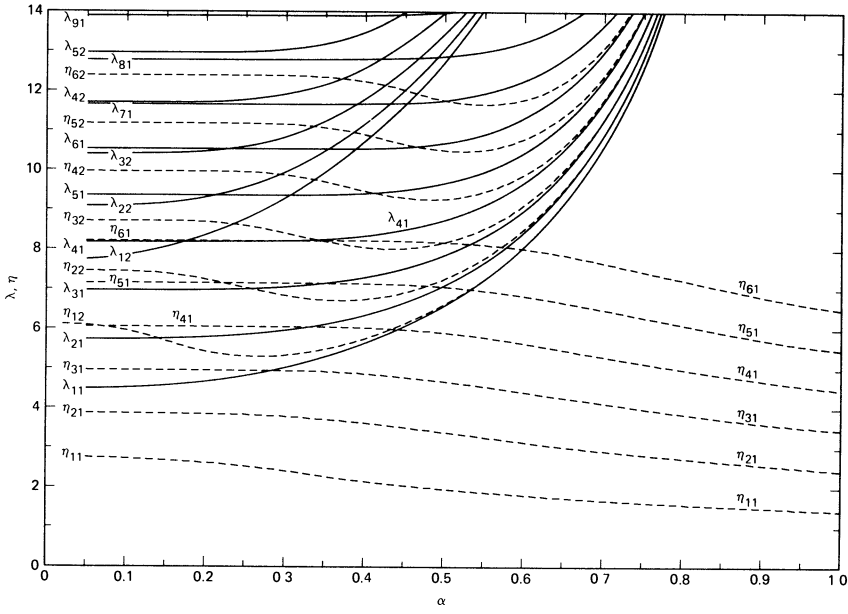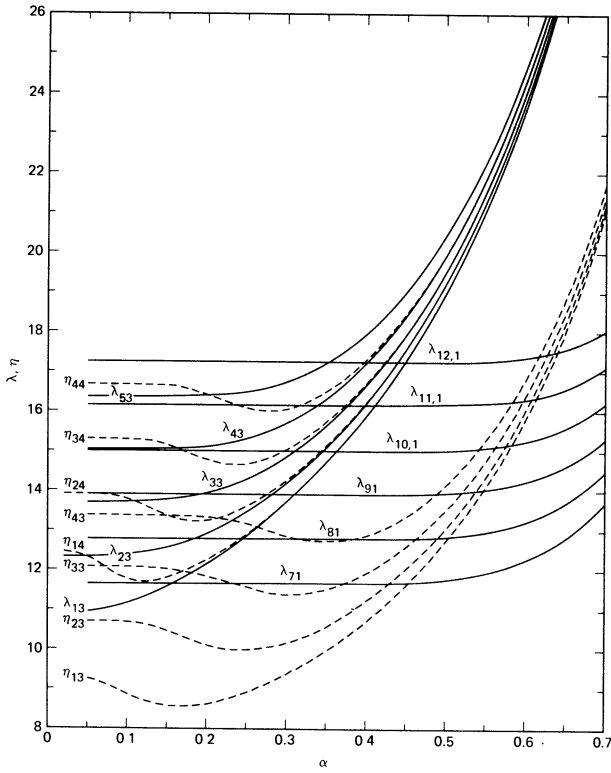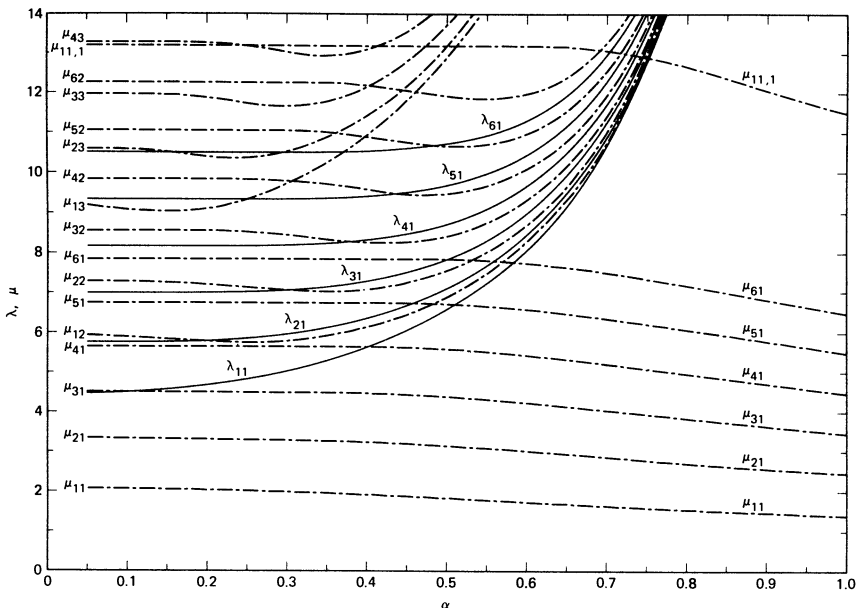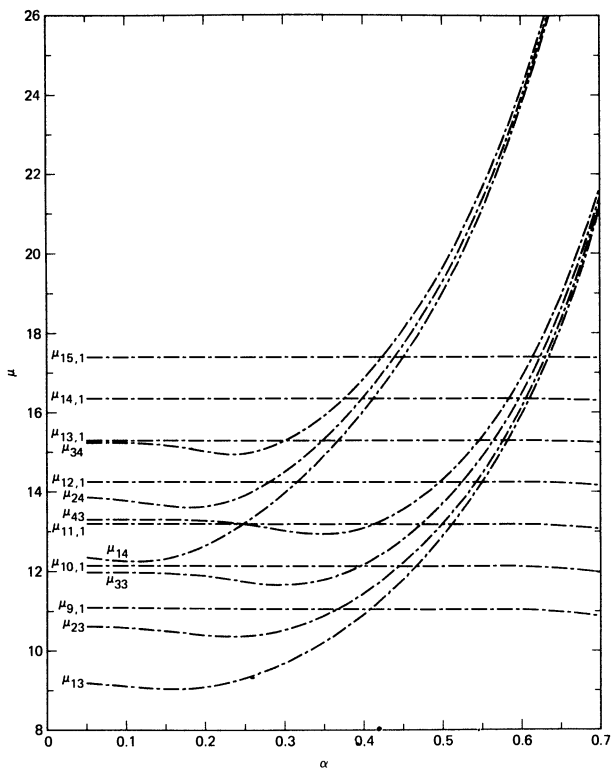
FIGURE 1

FIGURE 2

FIGURE 3

FIGURE 4

TABLE 1

(	L	N	L'N'	)	ALPHA	LAMBDA L N	=LAMBDA L'N'
	4	1	1	2	1.7126280679338E-01	8.1827583831863E+00	
	5	1	1	2	3.0409732823857E-01	9.3613355361517E+00	
	6	1	1	2	3.8976135002034E-01	1.0532706055389E+01	
	6	1	2	2	3.5386004528366E-01	1.0520195451432E+01	
	6	1	3	2	2.2097368533374E-01	1.0512868726504E+01	
	7	1	1	2	4.5437133153515E-01	1.1700001008926E+01	
	7	1	1	3	1.5561575903538E-01	1.1657032221077E+01	
	7	1	2	2	4.3360736205650E-01	1.1682964958136E+01	
	7	1	3	2	3.9132959670722E-01	1.1665087032676E+01	
	8	1	1	2	5.0576934362594E-01	1.2864655267768E+01	
	8	1	1	3	2.4512007807570E-01	1.2790784560892E+01	
	8	1	2	2	4.9211925714532E-01	1.2845000200407E+01	
	8	1	3	2	4.6761080775992E-01	1.2820563923668E+01	
	8	1	4	2	4.2082222482786E-01	1.2798735665857E+01	
	9	1	1	2	5.4792997100230E-01	1.4027463366049E+01	
	9	1	1	3	3.1159812200931E-01	1.3915849824674E+01	
	9	1	2	2	5.3830422197287E-01	1.4006383094531E+01	
	9	1	2	3	2.8402501739023E-01	1.3915828212438E+01	
	9	1	3	2	5.2197951870556E-01	1.3978168461079E+01	
	9	1	3	3	1.9978525072569E-01	1.3915822621344E+01	
	9	1	4	2	4.9509609247442E-01	1.3947734440023E+01	
	9	1	5	2	4.4467217849102E-01	1.3923184183159E+01	
	10	1	1	2	5.8325888352305E-01	1.5188915448963E+01	
	10	1	1	3	3.6552967527839E-01	1.5033586473287E+01	
	10	1	2	2	5.7614980031642E-01	1.5167149736328E+01	
	10	1	2	3	3.4833291387055E-01	1.5033518544033E+01	
	10	1	3	2	5.6447336371849E-01	1.5136868983423E+01	
	10	1	3	3	3.1393437146020E-01	1.5033476537993E+01	
	11	1	1	2	6.1334878454385E-01	1.6349353805599E+01	
	11	1	1	3	4.1080728016735E-01	1.6145080366711E+01	
	11	1	2	2	6.0791916366849E-01	1.6327346699072E+01	
	11	1	2	3	3.9892636166092E-01	1.6144937075439E+01	
	11	1	3	2	5.9917971203256E-01	1.6296054654392E+01	
	11	1	3	3	3.7770573236507E-01	1.6144810875390E+01	
	11	1	4	3	3.3748506326985E-01	1.6144750217050E+01	
	12	1	1	3	4.4959836288581E-01	1.7251218533827E+01	
	12	1	2	3	4.4089502244773E-01	1.7250975357694E+01	
	12	1	3	3	4.2616668360948E-01	1.7250719265198E+01	
	12	1	4	3	4.0193870378578E-01	1.7250534757090E+01	
	12	1	5	3	3.5606684458354E-01	1.7250460870201E+01	

TABLE 2

(	L	N	L'N'	)	ALPHA	ETA L N	=ETA L'N'
	1	4	3	3	7.1506742584463E-02	1.2063302630523E+01	
	1	4	3	3	1.7269587060611E-01	1.1971485186709E+01	
	2	4	4	3	1.4739100984938E-01	1.3375996312163E+01	
	2	4	4	3	2.1447582237830E-01	1.3301666048358E+01	
	4	1	1	2	7.0010866660159E-02	6.0619493542981E+00	
	4	1	1	2	4.3458767568285E-01	6.0030517595060E+00	
	5	1	2	2	2.2766429824463E-01	7.1401934217484E+00	
	5	1	2	2	4.7752997364267E-01	7.0874487501519E+00	
	6	1	1	2	5.9706171548852E-01	8.0176551250788E+00	
	6	1	2	2	5.7280039842735E-01	8.0738795809855E+00	
	6	1	3	2	3.4650342360255E-01	8.2102063139689E+00	
	6	1	3	2	5.0211244439851E-01	8.1713407895880E+00	

TABLE 3

(L N	L˙N˙)	ALPHA	MU = MU L N L˙N˙
4 2	1 3	3.0560166436990E-01	9.7768178761880E+00
5 1	1 2	4.8095936180034E-01	6.7286219288186E+00
5 2	1 3	3.9712594537559E-01	1.0907437280180E+01
5 2	2 3	3.6017923608757E-01	1.0985809391387E+01
6 1	1 2	5.6975608228212E-01	7.7799021272269E+00
6 1	2 2	5.3008031720922E-01	7.8151404673729E+00
6 2	1 3	4.6086226890926E-01	1.2027472118634E+01
6 2	2 3	4.4235479078226E-01	1.2082141526461E+01
6 2	3 3	4.0086360642163E-01	1.2183767505963E+01
11 1	1 2	7.5245224521590E-01	1.2900218460577E+01
11 1	1 3	5.1289565648331E-01	1.3201822683999E+01
11 1	2 2	7.4842642924687E-01	1.2916571602170E+01
11 1	2 3	4.9970788799001E-01	1.3202131098528E+01
11 1	3 2	7.4187972123218E-01	1.2942076321558E+01
11 1	3 3	4.7477568847200E-01	1.3202436363935E+01
11 1	4 2	7.3197615271535E-01	1.2978024567707E+01
11 1	4 3	2.4213818395278E-01	1.3202620396698E+01
11 1	4 3	4.1327087559330E-01	1.3202606622369E+01
11 1	5 2	7.1694914307867E-01	1.3026357464333E+01
11 1	6 2	6.9211056986977E-01	1.3089897269223E+01

TABLE 4

(L N	L˙N˙)	ALPHA	ETA = LAMBDA L N L˙N˙
1 2	2 1	1.3689030947367E-01	5.7698729929792E+00
2 2	3 1	2.5490599344310E-01	7.0125755915093E+00
3 1	1 1	2.8204263961059E-01	4.9628270089990E+00
3 2	1 2	2.3275232200162E-01	8.6404980615129E+00
3 2	4 1	3.4191635465948E-01	8.2299074031068E+00
4 1	1 1	4.4340090404323E-01	5.9938297878784E+00
4 1	2 1	3.3126377223292E-01	6.0548990423623E+00
4 2	1 2	3.3538474533576E-01	9.7467178201909E+00
4 2	2 2	2.9128555571748E-01	9.8790007045619E+00
4 2	5 1	4.0829201719491E-01	9.4274365569750E+00
5 1	1 1	5.3467701345668E-01	7.0073191021999E+00
5 1	2 1	4.9554033050096E-01	7.0678976923855E+00
5 1	3 1	3.5099931773671E-01	7.1373138327947E+00
5 2	1 2	4.0869156889741E-01	1.0845663836043E+01
5 2	2 2	3.8640362512342E-01	1.0943687797015E+01
5 2	3 2	3.3614281815884E-01	1.1101578465420E+01
5 2	6 1	4.6069883942953E-01	1.0609231450974E+01
6 1	1 1	5.9788204763506E-01	8.0155350185321E+00
6 1	1 2	1.7571383663424E-01	8.2108418325225E+00
6 1	2 1	5.7691251645373E-01	8.0652340589106E+00
6 1	3 1	5.3278531610879E-01	8.1399928443295E+00
6 1	4 1	3.1781767672858E-01	8.2106145469471E+00
6 2	1 2	4.6613765809816E-01	1.1945702066588E+01
6 2	2 2	4.5195326790701E-01	1.2015244502132E+01
6 2	3 2	4.2624725825721E-01	1.2134521594576E+01
6 2	4 2	3.7206387075334E-01	1.2308868562633E+01
6 2	7 1	5.0325034503418E-01	1.1778232641012E+01

TABLE 5

(L	N	L'N'	)	ALPHA	MU =LAMBDA L N L'N'
1	2	2	1	1.9772652403568E-01	5.7978760571995E+00
1	3	5	1	2.5328228275670E-01	9.3567654234745E+00
1	3	6	1	3.7047960270123E-01	1.0524710853371E+01
2	2	3	1	3.0582883643917E-01	7.0585791986358E+00
2	3	6	1	1.5518972152495E-01	1.0512835828998E+01
2	3	6	1	2.9717742615205E-01	1.0513921759296E+01
3	1	1	1	8.8968075131997E-02	4.5140980452001E+00
3	2	4	1	3.8473298267519E-01	8.2885288005756E+00
4	1	1	1	3.9915602451889E-01	5.6327241415465E+00
4	2	5	1	4.4493361027329E-01	9.4955108800748E+00
5	1	1	1	5.1154937581843E-01	6.7092762876190E+00
5	1	2	1	4.5771229756763E-01	6.7385473904137E+00
5	2	6	1	4.9257661295007E-01	1.0684757078089E+01
6	1	1	1	5.8381749833796E-01	7.7625837496334E+00
6	1	2	1	5.5807931870672E-01	7.7922454482169E+00
6	1	3	1	4.9833756415319E-01	7.8317911293936E+00
11	1	2	1	7.5063221509005E-01	1.2907673777424E+01
11	1	1	1	7.5437582202699E-01	1.2892228576026E+01
11	1	3	1	7.4461769841400E-01	1.2931575676039E+01
11	1	4	1	7.3571932123530E-01	1.2964815574344E+01
11	1	5	1	7.2278727362398E-01	1.3008476135871E+01
11	1	6	1	7.0437011937221E-01	1.3063400003542E+01

TABLE 6

(L	N	L'N'	)	ALPHA	MU = ETA LN L'N'
1	3	1	3	6.3289226469119E-02	9.1761179764685E+00
2	3	2	3	1.3291182914516E-01	1.0557617071159E+01
3	3	1	4	7.8698037003981E-02	1.1972438464397E+01
3	3	1	4	1.6847453074461E-01	1.1935272056718E+01
4	3	1	4	2.6549491005295E-01	1.3139594547296E+01
9	1	1	3	4.2113462436406E-01	1.1079274136952E+01
9	1	2	3	3.9090746881455E-01	1.1079376976673E+01
10	1	1	3	4.7479710312284E-01	1.2142770261848E+01
10	1	1	4	6.5333002137485E-02	1.2143204100943E+01
10	1	1	4	1.9041480082058E-01	1.2143204100935E+01
10	1	2	3	4.5687185169372E-01	1.2142984799306E+01
10	1	3	3	4.1866597226675E-01	1.2143159104602E+01

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Involving Spherical Bessel Functions, p. 1041.

PAGE

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 1 C
 2 C
 3 C
 4 C***   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   .
 5 C
 6 C
 7 C                  CODE EXAMPLE
 8 C
 9 C                  DEGENERATE ROOTS FOR  ETA   (ALPHA) = MU    (ALPHA)
10                                             LN            L'N'
11 C
12 C
13 C
14 C***   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   .
15 C
16 C
17 C
18 C
19 C
20 C
21 C
22 C
23 C
24 C
25      PROGRAM DEQ(TAPE4,ROOTS,TAPE3=ROOTS)
26 C  WHEN FUNC(X) CHANGES SIGN SUBROUTINE MVPOL LOCATES THE ROOT
27 C  THE TOLERANCE ALLOWED IN X IS XTOL
28      EXTERNAL FUNC,FUNK
29      COMMON /PEXT/L,A,LPR,LM,LPRM,LP,LPRP
30      CALL CHANGE(4H=PEX)
31      CALL DEVICE(6HCREATE,5HROOTS,5000)
32      NAMELIST/BLOCK1/DELX,XO,XTOL,YTOL,IMIN,IMAX,ITOLO,L,N,LPR,NPR,
33     CEPS,OD,A,DELA,XOO,T
34      CALL ASSIGN(4,O,6HINDATA)
35      WRITE (3,36)
36  36 FORMAT (5X,16HINPUT PARAMETERS,//)
37      INPUT DATA BLOCK1,4,3
38      WRITE (3,38)
39  38 FORMAT (5X,19HROOTS OF EQUATION 3,//)
40      WRITE (3,39)
41  39 FORMAT (1H1)
42      LM=L-1
43      LPRM=LPR-1
44      LP=L+1
45      LPRP=LPR+1
46  12 X1=XO
47      F1=FUNC(XO)
48      DO 1 I=IMIN,IMAX
49      X=XO+I*DELX
50      F=FUNC(X)
51      IF(F1*F2.GT.0.0) 98,99
52  98 F1=F2
53      X1=X
54   1 CONTINUE
55  99 X2=X
56      ITOL=ITOLO
57      CALL MVPOL(FUNC,X1,X2,XTOL,YTOL,ITOL,Y1,Y2)
58      ROOT1=X1
59      WRITE (3,558) ROOT1
60 558 FORMAT (2X,E25.13)
```

```
61        X1=X00
62        F1=FUNK(X00)
63        DO 2 I=IMIN,IMAX
64        X=X00+I*DELX
65        F2=FUNK(X)
66        IF(F1*F2.GT.0.0) 198,199
67    198 F1=F2
68        X1=X
69      2 CONTINUE
70    199 X2=X
71        ITOL=ITOLO
72        CALL MVPOL(FUNK,X1,X2,XTOL,YTOL,ITOL,Y1,Y2)
73        ROOT2=X1
74        WRITE (3,555) ROOT2
75      3 DIF=ROOT1-ROOT2
76        IF(ABS(DIF).LT.EPS) 10,11
77     11 IF(DIF*T).LT.0.0) 20,21
78     20 T=-1
79        DELA=DELA*DD
80     21 A=A+T*DELA
81        WRITE (3,555) A
82        GO TO 12
83     10 WRITE (3,999) A,ROOT1,ROOT2,L,N,LPR,NPR
84    999 FORMAT (2X,3E25.13,4I10)
85        CALL EXIT
86        END
```

```
87          FUNCTION FUNC(X)
88          COMMON /PEXT/L,A,LPR,LM,LPRM,LP,LPRP
89          REAL JA((0,500)),YA((0,500))
90  C                    SPHERICAL BESSEL FUNCTION OF THE 1ST & 2ND KIND
91  C       JA(L) = J SUB L OF X        YA(L) = Y SUB L OF X
92          AX=A*X
93          CALL SJYMEC(AX,JA,YA,MN,L)
94          TEML=AX*JA(LM)-LP*JA(L)
95          TEMR=AX*YA(LM)-LP*YA(L)
96          CALL SJYMEC(X,JA,YA,MN,L)
97          FUNC= TEML*(X*YA(LM)-LP*YA(L))-TEMR*(X*JA(LM)-LP*JA(L))
98          RETURN
99          END
```

```
100       FUNCTION FUNK(X)
101       COMMON /PEXT/L,A,LPR,LM,LPRM,LP,LPRP
102       REAL JA((0,500)),YA(10,500))
103 C                 SPHERICAL BESSEL FUNCTION OF THE 1ST & 2ND KIND
104 C       JA(L) = J SUB L OF X        YA(L) = Y SUB L OF X
105       AX=A*X
106       CALL SJYREC(AX,JA,YA,MN,LPR)
107       TEML=AX*JA(LPRM)-LPR*JA(LPR)
108       TEMR=AX*YA(LPRM)-LPR*YA(LPR)
109       CALL SJYREC(X,JA,YA,MN,LPR)
110       FUNK=TEML*(X*YA(LPRM)-LPR*YA(LPR))-TEMR*(X*JA(LPRM)-LPR*JA(LPR))
111       RETURN
112       END
```

```
113   C        SUBROUTINE NVPOL(FUN,X1,X2,XTOL,YTOL,ITOL,Y1,Y2)
114   C
115   C
116   C
117   C              A STABLE METHOD OF INVERSE INTERPOLATION
118   C
119   C              J.M BLATT
120   C
121   C
122   C              THE AUSTRALIAN COMPUTER JOURNAL
123   C
124   C              VOL  7   #2   JULY,1975     PP 51-57
125   C
126   C
127   C
128   C              METHOD
129   C
130   C              AT EVERY STAGE OF THE  ITERATION AT LEAST ONE ROOT
131   C              IS GUARANTEED TO LIE WITHIN THE INTERVAL (X1,X2)
132   C
133   C
134   C
135   C              IF CERTAIN CONDITIONS HOLD THE ROUTINE CALCULATES THE
136   C              NEXT APPROXIMATION USING MULLER'S QUADRATIC POLYNOMIAL
137   C
138   C              APPROXIMATION.   OTHERWISE A LINEAR APPROXIMATION IS USED.
139   C
140   C
141   C              'REDUCED VARIABLES' ARE USED FOR THE MULLER APPROXIMATION.
142   C
143   C
144   C
145   C
146   C
147   C
148   C              INVERSE INTERPOLATION BY MODIFIED MULLER METHOD
149   C
150   C
151   C              INPUT REQUIREMENTS
152   C
153   C              FUN=FUNCTION NAME.  WE WANT TO FIND X SUCH THAT F(X)=0.
154   C              NOTE THE ACTUAL NAME MUST BE DECLARED EXTERNAL IN THE
155   C
156   C              CALLING PROGRAM
157   C
158   C              X1=X-VALUE AT ONE END OF INTERVAL.
159   C
160   C              X2=X-VALUE AT OTHER END OF INTERVAL.
161   C
162   C              BY ASSUMPTION, Y1 AND Y2 HAVE OPPOSITE SIGNS  ROUTINE
163   C              CHECKS THIS, RETURNS WITH ITOL=-1 IF UNTRUE
164   C
165   C
166   C              XTOL=TOLERANCE C4 ROOT,I.E. ON ABS(X1-X2) AT THE END
167   C
168   C              YTOL=OPTIONAL TOLERANCE ON ABS(Y), IGNORED IF =0.
169   C
170   C              ITOL=MAX NO  OF ITERATIONS  IF ITOL LE  0, ITOL=60
171   C
172   C
```

```
173 C
174 C
175 C              AFTER RETURN FROM ROUTINE
176 C
177 C
178 C              (X1,Y1) AND (X2,Y2) ARE THE BEST POINTS FOUND.
179 C
180 C              ABS(Y1).LE.ABS(Y2)
181 C
182 C              IF(Y1.NE.0) THEN Y1 AND Y2 HAVE OPPOSITE SIGNS
183 C              ITOL IS THE ACTUAL NO. OF ITERATIONS USED.  IF THE
184 C
185 C              INITIAL POINTS WERE CHOSEN SO BADLY THAT Y1 AND Y2
186 C
187 C              HAD THE SAME SIGN, THEN ITOL IS SET TO -1, AND WE
188 C
189 C              EXIT IMMEDIATELY.
190 C
191 C
192 C              USER MUST SUPPLY
193 C
194 C
195 C              1  AN ACTUAL FUNCTION NAME TO REPLACE THE NOMINAL "FUN"
196 C
197 C              2  VALUES OF X1,X2,XTOL.
198 C
199 C              3. OPTIONALLY: VALUES OF YTOL,ITOL.
200 C
201 C              4. FUNCTION SUBPROGRAM, OF DECLARED NAME, TO EVALUATE
202 C
203 C              F(X)
204 C
205 C              5  WITHIN THE CALLING PROGRAM, AN "EXTERNAL" DECLARATION
206 C
207 C              FOR THAT FUNCTION NAME.
208 C
209 C
210 C
211 C
212 C
213 C
214       DIMENSION X(3),Y(3)
215       I=1         $K=3        $ITER=0    $MULLER=0
216       ITCH=1      $NOTCH=1    $XTOL=ABS(XTOL)
217       YTOL=ABS(YTOL)          $IF(ITOL.LE.0) ITOL=60
218       X(1)=X1     $Y(1)=FUN(X1)          $X(2)=X2
219       Y(2)=FUN(X2) $IF(Y(1)*Y(2)) 1100,9000,1050
220  1050 ITOL=-1      $GO TO 9100
221  1100 IF(ABS(Y(2)).LE.YTOL.OR.ABS(X(1)-X(2)).LE.XTOL.OR.ITER.GE.ITOL)
222       C GO TO 9000
223 C
224 C
225 C
226 C              TO DISPLAY INTERMEDIATE VALUES REMOVE THE "C" IN
227 C              COLUMN 1 OF THE FOLLOWING CARDS
228 C
229 C
230 C
231 C
232 C
```

```
233 C
234 C                     DEBUG PRINTING
235 C
236 C         WRITE (3,2323) I,K,ITER,MULLER,ITCH,NOTCH,MILLER,JJ
237  2323 FORMAT (8I5)
238 C         WRITE (3,2424) X(1),X(2),X(3),XNEW
239 C         WRITE (3,2424) Y(1),Y(2),Y(3),YNEW
240 C         WRITE (3,2424) PHI
241  2424 FORMAT (2X,4E25.13)
242 C
243 C
244       ITER=ITER+1   $PHI=0.5  $MILLER=1 $IF(ITCH.LE.0) GO TO 1150
245       ITCH=ITCH-1   $GO TO 2000
246  1150 MILLER=2      $IF(MULLER.GE.5) GO TO 2000
247       IF(X(2).EQ.X(K)) GO TO 9000      $ALPHA=(X(K)-X(I))/(X(2)-X(I))
248       IF(ALPHA.LE.1.001) GO TO 1550    $IF(ALPHA.GE.1000.0) GO TO 2000
249       BETA=Y(K)/Y(2)                   $GAMMA=-Y(I)/Y(2)
250       B=(ALPHA-1.0)*GAMMA/ALPHA-(ALPHA-BETA/ALPHA)/(ALPHA-1.0)
251       IF(B.LE.2.0*(B-GAMMA-1.0)*ALPHA.OR.B.LE.0.0) GO TO 2000
252       PHI=(2.0*GAMMA)/(B+SQRT(B-(2.0*GAMMA))**2+4.0*GAMMA))
253       MILLER=3      $MULLER=MULLER+1      $GO TO 2000
254  1550 PHI=AMAX1(1.0-2.0*(ALPHA-1.0),0.5)
255 C
256 C                     PATHS REJOIN
257 C
258  2000 XNEW=X(I)+PHI*(X(2)-X(I))
259       IF(XNEW.EQ.X(I).OR.XNEW.EQ.X(2)) GO TO 9000
260       YNEW=FUN(XNEW)
261       IF(MILLER.NE.3.OR.ABS(YNEW).LT.0.3*AMIN1(ABS(Y(I)),ABS(Y(21)))
262    C GO TO 2010
263 C
264 C                     A MULLER-TYPE ITERATION HAS PROVED UNSUCCESSFUL
265 C                     INHIBIT MULLER-TYPE ITERATIONS FOR A FEW TIMES,
266 C
267 C                     AND UP THE NUMBER OF INHIBITIONS FOR THE NEXT
268 C                     SUCH OCCURRENCE
269 C
270       ITCH=NOTCH    $NOTCH=NOTCH+1
271  2010 JJ=1          $IF(SIGN(YNEW,Y(2)).EQ.YNEW) GO TO 2040
272       IF(MILLER.EQ.1.OR.ABS(Y(K).GT.ABS(Y(I))) GO TO 2030
273 C
274 C                     DISCARD POINT I
275 C
276       X(I)=XNEW     $Y(I)=YNEW        $GO TO 2060
277 C
278 C                     PREPARE FOR SWITCHING LABELS I AND K
279 C
280  2030 JJ=2
281 C
282 C                     DISCARD POINT K
283 C
284  2040 X(K)=X(2)     $Y(K)=Y(2)        $X(2)=XNEW        $Y(2)=YNEW
285 C
286 C                     TEST FOR PRECISE ROOT.
287 C
288  2060 IF(Y(2).EQ.0.0) GO TO 8000      $GO TO (1100,2100),JJ
289 C
290 C                     INTERCHANGE LABELS I AND K
291 C
292  2100 JJ=1         $I=K      $K=JJ        $GO TO 1100
```

```
100         FUNCTION FUNK(X)
101         COMMON /PEXT/L,A,LPR,LM,LPRM,LP,LPRP
102         REAL JA((0,500)),YA(10,500))
103 C                       SPHERICAL BESSEL FUNCTION OF THE 1ST & 2ND KIND
104 C       JA(L) = J SUB L OF X          YA(L) = Y SUB L OF X
105         AX=A*X
106         CALL SJYMEC(AX,JA,YA,MN,LPR)
107         TEML=AX*JA(LPRM)-LPR*JA(LPR)
108         TEMR=AX*YA(LPRM)-LPR*YA(LPR)
109         CALL SJYMEC(X,JA,YA,MN,LPR)
110         FUNK=TEML*(X*YA(LPRM)-LPR*YA(LPR))-TEMR*(X*JA(LPRM)-LPR*JA(LPR))
111         RETURN
112         END
```

```
312        SUBROUTINE SJYMEC(X,J,Y,MN,NOUT)
313 C      JSUBN(X) YSUBN(X)        SPHERICAL BESSEL FUNCTIONS
314 C      DO NOT USE X=0
315 C      JSUB0(0)=1     JSUB N (0)=0    FOR ALL N GT 0
316 C      YSUB N (0)= INFINITY  FOR ALL N GE 0
317 C      Y SUB N (X)=-J SUB (-(N+1)) (X)     FOR ALL N GE 0
318 C      MN   MAXIMUM NUMBER OF SUBSCRIPT OF BESSEL FUNCTIONS COMPUTED
319 C      NOUT    MAXIMUM SUBSCRIPT OF DESIRED BESSEL FUNCTIONS
320 C      RECURRENCE TECHNIQUES FOR BESSEL FUNCTIONS
321 C      FR  MECHEL  MATH OF COMP   VOL  22   NO  101  JAN  1968
322        REAL J JX
323        DIMENSION J(10,500),Y(10,500)
324 C      THE DIMENSION OF J AND Y MAY BE VARIED TO SUIT THE USERS NEEDS
325        DATA (BOUND=1 E13),(NADD=10),(ALPHA=1 ),(NXADD=10)
326 C      BOUND  NADD  ALPHA  NXADD    MAY BE VARIED
327 C      NXADD CONTROLS THE NUMBER OF TERMS IN THE CONTINUED FRACTION
328        MN=1    $J(0)=SINF(X)/X   $Y(0)=-COSF(X)/X
329        Y(1)=Y(0)/X-J(0)   $J(1)=J(0)/X+Y(0)
330 200    NM1N=X1   $NMAX=ALPHA+NOUT
331 C      UPWARD RECURSION VALID FOR N=X FOR BOTH BESSEL FUNCTIONS
332        DO 66 N=1,X   $MN=N+1  $TWON1=N+N+1 $J(MN)=TWON1*J(N)/X-J(N-1)
333 66     Y(MN)=TWON1*Y(N)/X-Y(N-1)  $IF(NOUT LE MN) RETURN
334        JX=J(MN)   $MNOUT=NMIN=MN
335 C      UPWARD RECURSION FOR YSUBN(X) TO OBTAIN GOOD GUESS FOR JSUBN(X)
336 3 DO 1 N=NMIN,NMAX   $TWON1=N+N+1   $MN=N+1
337        1 Y(MN )=TWON1*Y(N)/X-Y(N-1)   $IF(ABSF(Y(MN )) GT BOUND) 2,22
338 22     NMIN=NMAX+1   $NMAX=NMAX+NADD    $GO TO 3
339 2      X2=X+X   $J(MN-1)=-1 /(X2+Y(MN))   $PMIN1=QO=1   $QMIN1=D
340 C      DEVELOP CONTINUED FRACTION TO OBTAIN GOOD GUESS FOR JSUBN+1(X)
341        BO=PO=MN+MN-1      $DO 4 N=1,NXADD   $BO=BO+2
342        P1=BO*PO-X2*PMIN1     $Q1=BO*QO-X2*QMIN1
343        PMIN1=PO  $PO=P1   $QMIN1=QO   $QO=Q1
344 4      CONTINUE
345        QNMAX1=P1/Q1      $J(MN)   +X*J(MN-1)/QNMAX1
346        DO 5 N=MN-1,MNOUT+1,-1   $TWON1=N+N+1
347 5      J(N-1)=TWON1*J(N)/X-J(N+1)      $C=JX/J(MNOUT)
346 C      CORRECT BESSEL FUNCTIONS WITH WEIGHTING FACTOR
348        IF (X LT 1 E 3) RETURN
350        DO 6 N=MNOUT,NOUT
351 6      J(N)=C*J(N)   $RETURN
352        END
```

```
 1  C
 2  C
 3  C***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   *
 4  C
 5  C
 6  C                    ROOTS FOR EQUATION 3
 7  C
 8  C
 9  C***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   *
10  C
11  C
12  C
13  C
14  C
15  C
16  C
17  C
18  C
19  C
20  C
21        PROGRAM CROOTS (TAPE4,ROOTS,TAPE5,ROOTS)
22  C     CHAT ARNO3 CROOTS  PEXX P32 H H /   2   3
23  C  WHEN FUNC(X) CHANGES SIGN SUBROUTINE NVPOL LOCATES THE ROOT
24  C  THE TOLERANCE ALLOWED IN X IS XTOL
25        EXTERNAL FUNC
26        COMMON /PEX7/L,A,LM,LP
27        CALL CHANGE(4H+PEX)
28        CALL DEVICE (8HCREATE,5HROOTS,5ODOO)
29        NAMELIST/BLOCK1/DELX,XO,XTOL,YTOL,IMIN,IMAX,ITOLO,LMIN,LMAX
30        CALL ASSIGN(4,0,6HINDATA)
31        WRITE (5,36)
32  36  FORMAT (5X,16HINPUT PARAMETERS,//)
33        INPUT DATA BLOCK1,4,5
34        INTEGER PAGENO
35        PAGENO=0
36        DO 3 IA=1,7
37        A=IA*0.1
38        DO 2 L=LMIN,LMAX
39  39  WRITE (5,39)
40  39  FORMAT (1H1)
41        WRITE(5,38)
42  38  FORMAT (5X,19HROOTS OF EQUATION 3,//)
43        LM=L-1
44        LP=L+1
45        N = 0
46        X1=XO
47        F1=FUNC(XO)
48        DO 1 K=IMIN,IMAX
49        X=XO+K*DELX
50        F2=FUNC(X)
51        IF(F1*F2 GT 0.0) 98,99
52  98  F1=F2
53        X1=X
54        GO TO 1
55  99  X2=X
56        ITOL=ITOLO
57        CALL NVPOL(FUNC,X1,X2,XTOL,YTOL,ITOL,Y1,Y2)
58        N=N+1
59        WRITE (5,37) A,L,N,X1
60  37  FORMAT (2X,4HA = ,F5.2,2X,4HL = ,I3,2X,4HN = ,
```

```
61         C13,8X,7HROOT = ,E20 !3)
62            F1=F2
63            X1=X
64            IF(N GE 3D) 4,1
65          1 CONTINUE
66          4 PAGENO=PAGENO+1
67            WRITE (5,35) PAGENO
68         35 FORMAT (/////,24X,I5)
69          2 CONTINUE
70          3 CONTINUE
71            CALL EXIT
72            END
```

```
73        FUNCTION FUNC(X)
74        COMMON /PEXT/L,A,LM,LP
75        REAL JA((0,500)),YA((0,500))
76  C               SPHERICAL BESSEL FUNCTIONS OF THE 1ST & 2ND KIND
77  C       JA(L) = J SUB L OF X      YA(L) = Y SUB L OF X
78        AX=A*X
79        CALL SJYMEC(AX,JA,YA,MN,L)
80        TEML=AX*JA(LM)-LP*JA(L)
81        TEMR=AX*YA(LM)-LP*YA(L)
82        CALL SJYMEC(X,JA,YA,MN,L)
83        FUNC=TEML*(X*YA(LM)-LP*YA(L))-TEMR*(X*JA(LM)-LP*JA(L))
84        RETURN
85        END
```

```
86       SUBROUTINE NVPOL(FUN,X1,X2,XTOL,YTOL,ITOL,Y1,Y2)
87  C
88  C
89  C           A STABLE METHOD OF INVERSE INTERPOLATION
90  C
91  C           J.M.BLATT
92  C
93  C           THE AUSTRALIAN COMPUTER JOURNAL
94  C
95  C           VOL. 7   #2   JULY,1975      PP 51-57
96  C
97  C
98  C
99  C
100 C           METHOD
101 C           AT EVERY STAGE OF THE  ITERATION AT LEAST ONE ROOT
102 C           IS GUARANTEED TO LIE WITHIN THE INTERVAL (X1,X2).
103 C
104 C
105 C           IF CERTAIN CONDITIONS HOLD THE ROUTINE CALCULATES THE
106 C           NEXT APPROXIMATION USING MULLER'S QUADRATIC POLYNOMIAL
107 C           APPROXIMATION.  OTHERWISE A LINEAR APPROXIMATION IS USED.
108 C
109 C           "REDUCED VARIABLES" ARE USED FOR THE MULLER APPROXIMATION.
110 C
111 C
112 C
113 C
114 C
115 C           INVERSE INTERPOLATION BY MODIFIED MULLER METHOD
116 C
117 C
118 C           INPUT REQUIREMENTS
119 C
120 C           FUN=FUNCTION NAME. WE WANT TO FIND X SUCH THAT F(X)=0.
121 C           NOTE THE ACTUAL NAME MUST BE DECLARED EXTERNAL IN THE
122 C           CALLING PROGRAM.
123 C           X1=X-VALUE AT ONE END OF INTERVAL.
124 C           X2=X-VALUE AT OTHER END OF INTERVAL.
125 C           BY ASSUMPTION, Y1 AND Y2 HAVE OPPOSITE SIGNS. ROUTINE
126 C           CHECKS THIS, RETURNS WITH ITOL=-1 IF UNTRUE.
127 C           XTOL=TOLERANCE ON ROOT,I.E. ON ABS(X1-X2) AT THE END
128 C           YTOL=OPTIONAL TOLERANCE ON ABS(Y), IGNORED IF =0.
129 C           ITOL=MAX.NO. OF ITERATIONS. IF ITOL.LE. 0, ITOL=60.
```

```
146 C
147 C
148 C           AFTER RETURN FROM ROUTINE
149 C
150 C           (X1,Y1) AND (X2,Y2) ARE THE BEST POINTS FOUND
151 C
152 C           ABS(Y1).LE.ABS(Y2)
153 C
154 C           IF(Y1.NE.0) THEN Y1 AND Y2 HAVE OPPOSITE SIGNS
155 C
156 C           ITOL IS THE ACTUAL NO. OF ITERATIONS USED.  IF THE
157 C
158 C           INITIAL POINTS WERE CHOSEN SO BADLY THAT Y1 AND Y2
159 C
160 C           HAD THE SAME SIGN, THEN ITOL IS SET TO -1, AND WE
161 C
162 C           EXIT IMMEDIATELY.
163 C
164 C
165 C           USER MUST SUPPLY
166 C
167 C
168 C
169 C           1.  AN ACTUAL FUNCTION NAME TO REPLACE THE NOMINAL "FUN".
170 C
171 C           2.  VALUES OF X1,X2,XTOL.
172 C
173 C           3.  OPTIONALLY, VALUES OF YTOL,ITOL
174 C
175 C           4.  FUNCTION SUBPROGRAM, OF DECLARED NAME, TO EVALUATE
176 C
177 C           F(X)
178 C
179 C           5.  WITHIN THE CALLING PROGRAM, AN "EXTERNAL" DECLARATION
180 C
181 C           FOR THAT FUNCTION NAME.
182 C
183 C
184 C
185 C
186 C
187         DIMENSION X(3),Y(3)
188         I=1          $K=3        $ITER=0    $MULLER=0
189         ITCH=1       $NOTCH=1    $XTOL=ABS(XTOL)
190         YTOL=ABS(YTOL)           $IF(ITOL.LE.0) ITOL=60
191         X(1)=X1      $Y(1)=FUN(X1)          $X(2)=X2
192         Y(2)=FUN(X2) $IF(Y(1)*Y(2)) 1100,9000,1050
193 1050    ITOL=-1      $GO TO 9100
194 1100    IF(ABS(Y(2)).LE.YTOL.OR.ABS(X(1)-X(2)).LE.XTOL.OR.ITER.GE.ITOL)
195      C  GO TO 9000
196 C
197 C
198 C
199 C           TO DISPLAY INTERMEDIATE VALUES REMOVE THE "C" IN
200 C           COLUMN 1 OF THE FOLLOWING CARDS
201 C
202 C
203 C
204 C
205 C
```

```
206 C
207 C                    DEBUG PRINTING
208 C
209      WRITE (3,2323) I,K,ITER,MULLER,ITCH,NOTCH,MILLER,JJ
210 2323 FORMAT (8I5)
211 C    WRITE (3,2424) X(1),X(2),X(3),XNEW
212 C    WRITE (3,2424) Y(1),Y(2),Y(3),YNEW
213 C    WRITE (3,2424) PHI
214 2424 FORMAT (2X,4E25.13)
215 C
216 C
217      ITER=ITER+1    $PHI=0.5   $MILLER=1  $IF(ITCH.LE.0) GO TO 1150
218      ITCH=ITCH-1    $GO TO 2000
219 1150 MILLER=2       $IF(MULLER.GE.5) GO TO 2000
220      IF(X(2).EQ.X(1)) GO TO 9000      $ALPHA=(X(K)-X(1))/(X(2)-X(1))
221      IF(ALPHA.LE.1.001) GO TO 1550    $IF(ALPHA.GE.1000.0) GO TO 2000
222      BETA=Y(K)/Y(2)                   $GAMMA=-Y(1)/Y(2)
223      B=(ALPHA-1.0)*GAMMA/ALPHA-ALPHA*BETA/ALPHA/(ALPHA-1.0)
224      IF(B.LE.2.0*(B-GAMMA.1.0)*ALPHA.OR.B.LE.0.0) GO TO 2000
225      PHI=(2.0*GAMMA)/(B-SQRT((B-2.0*GAMMA)**2+4.0*GAMMA))
226      MILLER=3       $MULLER=MULLER+1        $GO TO 2000
227 1550 PHI=AMAX1(1.0-2.0/(ALPHA-1.0),0.5)
228 C
229 C                    PATHS REJOIN
230 C
231 2000 XNEW=X(1)+PHI*(X(2)-X(1))
232      IF(XNEW.EQ.X(1).OR.XNEW.EQ.X(2)) GO TO 9000
233      YNEW=FUN(XNEW)
234      IF(MILLER.NE.3.OR.ABS(YNEW).LT.0.3*AMIN1(ABS(Y(1)),ABS(Y(2))))
235 C    GO TO 2010
236 C
237 C                    A MULLER-TYPE ITERATION HAS PROVED UNSUCCESSFUL
238 C                    INHIBIT MULLER-TYPE ITERATIONS FOR A FEW TIMES
239 C
240 C                    AND UP THE NUMBER OF INHIBITIONS FOR THE NEXT
241 C                    SUCH OCCURRENCE
242 C
243      ITCH=NOTCH     $NOTCH=NOTCH+1
244 2010 JJ=1           $IF(SIGN(YNEW,Y(2).EQ.YNEW) GO TO 2040
245      IF(MILLER.EQ.1.OR.ABS(Y(1).GT.ABS(Y(1))) GO TO 2030
246 C
247 C                    DISCARD POINT I
248 C
249      X(1)=XNEW      $Y(1)=YNEW        $GO TO 2060
250 C
251 C                    PREPARE FOR SWITCHING LABELS I AND K
252 C
253 2030 JJ=2
254 C
255 C                    DISCARD POINT K
256 C
257 2040 X(K)=X(2)      $Y(K)=Y(2)        $X(2)=XNEW        $Y(2)=YNEW
258 C
259 C                    TEST FOR PRECISE ROOT
260 C
261 2060 IF(Y(2).EQ.0.0) GO TO 8000       $GO TO (1100,2100),JJ
262 C
263 C                    INTERCHANGE LABELS I AND K
264 C
265 2100 JJ=I          $I=K       $K=JJ       $GO TO 1100
```

```
266 C
267 C                    FINISHED
268 C
269 C                    Y(2) WAS EXACTLY ZERO. SELECT THE BEST OTHER ONE.
270 C
271   8000 IF(ABS(Y(K)) LT.ABS(Y(I))) I=K
272 C
273 C                    REPORT NO. OF ITERATIONS USED.
274 C
275   9000 ITOL=ITER
276 C
277 C                    REPORT THE TWO BEST POINTS FOUND.
278 C
279   9100 IF(ABS(Y(2)).LE.ABS(Y(I))) GO TO 9200
280        I1=1         $I2=2      $GO TO 9300
281   9200 I1=2         $I2=1
282   9300 X1=X(I1)     $Y1=Y(I1)        $X2=X(I2)        $Y2=Y(I2)
283        RETURN
284        END
```

```
285 C      SUBROUTINE SJYMEC(X,J,Y,MN,NOUT)
286 C      JSUBN(X),YSUBN(X)        SPHERICAL BESSEL FUNCTIONS
287 C      DO NOT USE X=0
288 C      JSUB0(0)=1.    JSUB N (0)=0   FOR ALL N GT 0
289 C      YSUB N (0)=1.  INFINITY  FOR ALL N GE 0.
290 C      Y SUB N (X)=-J SUB (-(N+1))  (X)        FOR ALL N GE 0
291 C      MN  MAXIMUM NUMBER OF SUBSCRIPT OF BESSEL FUNCTIONS COMPUTED
292 C      NOUT    MAXIMUM SUBSCRIPT OF DESIRED BESSEL FUNCTIONS
293 C      RECURRENCE TECHNIQUES FOR BESSEL FUNCTIONS
294 C      FR  MECHEL   MATH OF COMP.  VOL. 22   NO. 101  JAN. 1968
295        REAL J,JX
296        DIMENSION J((0,500)),Y((0,500))
297 C      THE DIMENSION OF J AND Y MAY BE VARIED TO SUIT THE USERS NEEDS
298        DATA (BOUND=1.E13),(NADD=10),(ALPHA=1.),(NXADD=10)
299 C      BOUND   NADD   ALPHA   NXADD   MAY BE VARIED
300 C      NXADD CONTROLS THE NUMBER OF TERMS IN THE CONTINUED FRACTION
301        MN=1   $J(0)=SINF(X)/X  $Y(0)= COSF(X)/X
302        Y(1)=Y(0)/X-J(0)  $J(1)=J(0)/X-Y(0)
303   200  NMIN=1  $NMAX=ALPHA*NOUT
304 C      UPWARD RECURSION VALID FOR N<X FOR BOTH BESSEL FUNCTIONS
305        DO 86 N=1,X  $PMN=N+1 STWON1=N+N+1 $J(MN)=TWON1*J(N)/X-J(N-1)
308   86   Y(MN)=TWON1*Y(N)/X-Y(N-1)  $IF(NOUT LE MN) RETURN
307        JX=J(MN)   $MNOUT=NM1N+MN
308 C      UPWARD RECURSION FOR YSUBN(X)  TO OBTAIN GOOD GUESS FOR JSUBN(X)
309   3 DO 1 N=NMIN,NMAX  $TWON1=N+N+1    $PMN=N+1
310     1 Y(MN )=TWON1*Y(N)/X Y(N-1)    $IF(ABSF(Y(MN )) OT BOUND) 2,22
311   22   MMIN=NMAX+1    $NMAX=NMAX+NADD     $GO TO 3
312     2 X2=X*X   $J(MN-1)=-1./(X2*Y(MN))    $PMIN1=Q0+1.   $QMIN1=0.
313 C      DEVELOP CONTINUED FRACTION TO OBTAIN GOOD GUESS FOR JSUB..+'(X)
314        B0=P0+MN-MN+1            $DO 4 N=1,NXADD  $B0=B0+2.
315        P1=B0+P0  X2+PMIN1      $Q1=B0+Q0 X2+QMIN1
316        PMIN1=P0  $P0=P1   $QMIN1=Q0  $Q0=Q1
317     4 CONTINUE
318        GNMAX1=P1/Q1  $J(MN)   +X+J(MN-1)/GNMAX1
319        DO 5 N=MN-1,MNOUT+1,-1   STWON1=N+N+1
320     5  J(N-1)=TWON1*J(N)/X-J(N-1)    $C=JX/J(MNOUT)
321 C      CORRECT BESSEL FUNCTIONS WITH WEIGHTING FACTOR
322        IF (X LT.1.E-3) RETURN
323        DO 6 N=MNOUT,NOUT
324     6  J(N)=C*J(N)   $RETURN
325        END
```

INPUT PARAMETERS

```
LMIN      =1
LMAX      =15
DELX      =1.0
X0        =1.0
XTOL      =1.0E-12
YTOL      =0.0
IMIN      =1
IMAX      =7000
ITOL0     =50
END
```

ROOTS OF EQUATION 3

								ROOT
A = 0.10	L =	1	N =	1	ROOT =	2.0782433453790E+00
A = 0.10	L =	1	N =	2	ROOT =	5.9080384413978E+00
A = 0.10	L =	1	N =	3	ROOT =	9.1145918690435E+00
A = 0.10	L =	1	N =	4	ROOT =	1.2257673438042E+01
A = 0.10	L =	1	N =	5	ROOT =	1.5427349947224E+01
A = 0.10	L =	1	N =	6	ROOT =	1.8659350444722E+01
A = 0.10	L =	1	N =	7	ROOT =	2.1953633227674E+01
A = 0.10	L =	1	N =	8	ROOT =	2.5296752920981E+01
A = 0.10	L =	1	N =	9	ROOT =	2.8675091163945E+01
A = 0.10	L =	1	N =	10	ROOT =	3.2078398469007E+01
A = 0.10	L =	1	N =	11	ROOT =	3.5499592092359E+01
A = 0.10	L =	1	N =	12	ROOT =	3.8933859842229E+01
A = 0.10	L =	1	N =	13	ROOT =	4.2377898291463E+01
A = 0.10	L =	1	N =	14	ROOT =	4.5829402713909E+01
A = 0.10	L =	1	N =	15	ROOT =	4.9286724599653E+01
A = 0.10	L =	1	N =	16	ROOT =	5.2748661612552E+01
A = 0.10	L =	1	N =	17	ROOT =	5.6214318489472E+01
A = 0.10	L =	1	N =	18	ROOT =	5.9683016138011E+01
A = 0.10	L =	1	N =	19	ROOT =	6.3154230704148E+01
A = 0.10	L =	1	N =	20	ROOT =	6.6627551903455E+01
A = 0.10	L =	1	N =	21	ROOT =	7.0102653969072E+01
A = 0.10	L =	1	N =	22	ROOT =	7.3579275023055E+01
A = 0.10	L =	1	N =	23	ROOT =	7.7057202177606E+01
A = 0.10	L =	1	N =	24	ROOT =	8.0536268603993E+01
A = 0.10	L =	1	N =	25	ROOT =	8.4016305395234E+01
A = 0.10	L =	1	N =	26	ROOT =	8.7497215426948E+01
A = 0.10	L =	1	N =	27	ROOT =	9.0978888668222E+01
A = 0.10	L =	1	N =	28	ROOT =	9.4461238559810E+01
A = 0.10	L =	1	N =	29	ROOT =	9.7944191181908E+01
A = 0.10	L =	1	N =	30	ROOT =	1.0142768303247E+02

ROOTS OF EQUATION 3

								ROOT
A = 0.10	L =	2	N =	1	ROOT =	3.3419694070427E+00
A = 0.10	L =	2	N =	2	ROOT =	7.2869427232948E+00
A = 0.10	L =	2	N =	3	ROOT =	1.0597335178644E+01
A = 0.10	L =	2	N =	4	ROOT =	1.3794544455963E+01
A = 0.10	L =	2	N =	5	ROOT =	1.6930452944117E+01
A = 0.10	L =	2	N =	6	ROOT =	2.0037689199275E+01
A = 0.10	L =	2	N =	7	ROOT =	2.3157699354095E+01
A = 0.10	L =	2	N =	8	ROOT =	2.6325449629154E+01
A = 0.10	L =	2	N =	9	ROOT =	2.9553613337985E+01
A = 0.10	L =	2	N =	10	ROOT =	3.2836997255558E+01
A = 0.10	L =	2	N =	11	ROOT =	3.6164206403852E+01
A = 0.10	L =	2	N =	12	ROOT =	3.9524394629818E+01
A = 0.10	L =	2	N =	13	ROOT =	4.2909142569084E+01
A = 0.10	L =	2	N =	14	ROOT =	4.6312338744404E+01
A = 0.10	L =	2	N =	15	ROOT =	4.9729615735317E+01
A = 0.10	L =	2	N =	16	ROOT =	5.3157834495220E+01
A = 0.10	L =	2	N =	17	ROOT =	5.6594706162692E+01
A = 0.10	L =	2	N =	18	ROOT =	6.0038532625171E+01
A = 0.10	L =	2	N =	19	ROOT =	6.3488031575390E+01
A = 0.10	L =	2	N =	20	ROOT =	6.6942218192654E+01
A = 0.10	L =	2	N =	21	ROOT =	7.0400324180901E+01
A = 0.10	L =	2	N =	22	ROOT =	7.3861741515420E+01
A = 0.10	L =	2	N =	23	ROOT =	7.7325982709183E+01
A = 0.10	L =	2	N =	24	ROOT =	8.0792652203089E+01
A = 0.10	L =	2	N =	25	ROOT =	8.4261425955207E+01
A = 0.10	L =	2	N =	26	ROOT =	8.7732035232610E+01
A = 0.10	L =	2	N =	27	ROOT =	9.1204255843626E+01
A = 0.10	L =	2	N =	28	ROOT =	9.4677898940368E+01
A = 0.10	L =	2	N =	29	ROOT =	9.8152084327634E+01
A = 0.10	L =	2	N =	30	ROOT =	1.0162083519343E+02

1

ROOTS OF EQUATION 3

				ROOT
A = 0.10	L = 3	N = 1	ROOT =	4.5140960303690E+00
A = 0.10	L = 3	N = 2	ROOT =	8.5035905834545E+00
A = 0.10	L = 3	N = 3	ROOT =	1.1971287276635E+01
A = 0.10	L = 3	N = 4	ROOT =	1.5237767200042E+01
A = 0.10	L = 3	N = 5	ROOT =	1.8446342023910E+01
A = 0.10	L = 3	N = 6	ROOT =	2.1612200063213E+01
A = 0.10	L = 3	N = 7	ROOT =	2.4740561105620E+01
A = 0.10	L = 3	N = 8	ROOT =	2.7842038546987E+01
A = 0.10	L = 3	N = 9	ROOT =	3.0941276026329E+01
A = 0.10	L = 3	N = 10	ROOT =	3.4069212212012E+01
A = 0.10	L = 3	N = 11	ROOT =	3.7246731147070E+01
A = 0.10	L = 3	N = 12	ROOT =	4.0478240692725E+01
A = 0.10	L = 3	N = 13	ROOT =	4.3757537045298E+01
A = 0.10	L = 3	N = 14	ROOT =	4.7075294160089E+01
A = 0.10	L = 3	N = 15	ROOT =	5.0422922302044E+01
A = 0.10	L = 3	N = 16	ROOT =	5.3793619657040E+01
A = 0.10	L = 3	N = 17	ROOT =	5.7182279027755E+01
A = 0.10	L = 3	N = 18	ROOT =	6.0585115550427E+01
A = 0.10	L = 3	N = 19	ROOT =	6.3999311767979E+01
A = 0.10	L = 3	N = 20	ROOT =	6.7422745099987E+01
A = 0.10	L = 3	N = 21	ROOT =	7.0853792751395E+01
A = 0.10	L = 3	N = 22	ROOT =	7.4291195185516E+01
A = 0.10	L = 3	N = 23	ROOT =	7.7733959612373E+01
A = 0.10	L = 3	N = 24	ROOT =	8.1181294136835E+01
A = 0.10	L = 3	N = 25	ROOT =	8.4632557840363E+01
A = 0.10	L = 3	N = 26	ROOT =	8.8087226651100E+01
A = 0.10	L = 3	N = 27	ROOT =	9.1544867470099E+01
A = 0.10	L = 3	N = 28	ROOT =	9.5005119002961E+01
A = 0.10	L = 3	N = 29	ROOT =	9.8467677273467E+01
A = 0.10	L = 3	N = 30	ROOT =	1.0193228453639E+02

3

1

ROOTS OF EQUATION 3

				ROOT
A = 0.10	L = 4	N = 1	ROOT =	5.6467035263953E+00
A = 0.10	L = 4	N = 2	ROOT =	9.8404388776503E+00
A = 0.10	L = 4	N = 3	ROOT =	1.3295471092109E+01
A = 0.10	L = 4	N = 4	ROOT =	1.6608751654197E+01
A = 0.10	L = 4	N = 5	ROOT =	1.9859057328092E+01
A = 0.10	L = 4	N = 6	ROOT =	2.3074370869424E+01
A = 0.10	L = 4	N = 7	ROOT =	2.6260813571776E+01
A = 0.10	L = 4	N = 8	ROOT =	2.9420027506414E+01
A = 0.10	L = 4	N = 9	ROOT =	3.2558669762204E+01
A = 0.10	L = 4	N = 10	ROOT =	3.5655658797094E+01
A = 0.10	L = 4	N = 11	ROOT =	3.8748640570556E+01
A = 0.10	L = 4	N = 12	ROOT =	4.1853526404425E+01
A = 0.10	L = 4	N = 13	ROOT =	4.4993806524396E+01
A = 0.10	L = 4	N = 14	ROOT =	4.8181793862712E+01
A = 0.10	L = 4	N = 15	ROOT =	5.1417755357229E+01
A = 0.10	L = 4	N = 16	ROOT =	5.4695461000032E+01
A = 0.10	L = 4	N = 17	ROOT =	5.8007143804141E+01
A = 0.10	L = 4	N = 18	ROOT =	6.1345025369539E+01
A = 0.10	L = 4	N = 19	ROOT =	6.4705915978025E+01
A = 0.10	L = 4	N = 20	ROOT =	6.8083122095265E+01
A = 0.10	L = 4	N = 21	ROOT =	7.1474179361386E+01
A = 0.10	L = 4	N = 22	ROOT =	7.4876595250484E+01
A = 0.10	L = 4	N = 23	ROOT =	7.8288446145705E+01
A = 0.10	L = 4	N = 24	ROOT =	8.1708227783081E+01
A = 0.10	L = 4	N = 25	ROOT =	8.5134742751752E+01
A = 0.10	L = 4	N = 26	ROOT =	8.8567048277532E+01
A = 0.10	L = 4	N = 27	ROOT =	9.2004350525742E+01
A = 0.10	L = 4	N = 28	ROOT =	9.5446013967058E+01
A = 0.10	L = 4	N = 29	ROOT =	9.8891506364392E+01
A = 0.10	L = 4	N = 30	ROOT =	1.0234038131259E+02

4

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ROOTS OF EQUATION 3

A = 0.10  L = 5  N = 1     ROOT = 6.7564563279020E+00
A = 0.10  L = 5  N = 2     ROOT = 1.1070206660197E+01
A = 0.10  L = 5  N = 3     ROOT = 1.4598547322009E+01
A = 0.10  L = 5  N = 4     ROOT = 1.7947138112126E+01
A = 0.10  L = 5  N = 5     ROOT = 2.1238038512775E+01
A = 0.10  L = 5  N = 6     ROOT = 2.4473078096632E+01
A = 0.10  L = 5  N = 7     ROOT = 2.7690584301212E+01
A = 0.10  L = 5  N = 8     ROOT = 3.0887299002966E+01
A = 0.10  L = 5  N = 9     ROOT = 3.4065633271205E+01
A = 0.10  L = 5  N = 10    ROOT = 3.7224022149007E+01
A = 0.10  L = 5  N = 11    ROOT = 4.0359576700461E+01
A = 0.10  L = 5  N = 12    ROOT = 4.3471560119150E+01
A = 0.10  L = 5  N = 13    ROOT = 4.6566147560718E+01
A = 0.10  L = 5  N = 14    ROOT = 4.9660369005526E+01
A = 0.10  L = 5  N = 15    ROOT = 5.2775225172400E+01
A = 0.10  L = 5  N = 16    ROOT = 5.5920055006661E+01
A = 0.10  L = 5  N = 17    ROOT = 5.9125500420619E+01
A = 0.10  L = 5  N = 18    ROOT = 6.2365926400816E+01
A = 0.10  L = 5  N = 19    ROOT = 6.5641159332397E+01
A = 0.10  L = 5  N = 20    ROOT = 6.8950789397070E+01
A = 0.10  L = 5  N = 21    ROOT = 7.2282773147587E+01
A = 0.10  L = 5  N = 22    ROOT = 7.5634670252790E+01
A = 0.10  L = 5  N = 23    ROOT = 7.9002746401030E+01
A = 0.10  L = 5  N = 24    ROOT = 8.2384170220993E+01
A = 0.10  L = 5  N = 25    ROOT = 8.5776738060250E+01
A = 0.10  L = 5  N = 26    ROOT = 8.9178917669519E+01
A = 0.10  L = 5  N = 27    ROOT = 9.2588730711193E+01
A = 0.10  L = 5  N = 28    ROOT = 9.6005666676064E+01
A = 0.10  L = 5  N = 29    ROOT = 9.9428619807106E+01
A = 0.10  L = 5  N = 30    ROOT = 1.0285694328996E+02
```

5

```
ROOTS OF EQUATION 3

A = 0.10  L = 6  N = 1     ROOT = 7.8510776794204E+00
A = 0.10  L = 6  N = 2     ROOT = 1.2279333973215E+01
A = 0.10  L = 6  N = 3     ROOT = 1.5863221597997E+01
A = 0.10  L = 6  N = 4     ROOT = 1.9262707490169E+01
A = 0.10  L = 6  N = 5     ROOT = 2.2570041057610E+01
A = 0.10  L = 6  N = 6     ROOT = 2.5845998189204E+01
A = 0.10  L = 6  N = 7     ROOT = 2.9084002182390E+01
A = 0.10  L = 6  N = 8     ROOT = 3.2301347631293E+01
A = 0.10  L = 6  N = 9     ROOT = 3.5507058240976E+01
A = 0.10  L = 6  N = 10    ROOT = 3.8691349322301E+01
A = 0.10  L = 6  N = 11    ROOT = 4.1866170363499E+01
A = 0.10  L = 6  N = 12    ROOT = 4.5025584736500E+01
A = 0.10  L = 6  N = 13    ROOT = 4.8166446189786E+01
A = 0.10  L = 6  N = 14    ROOT = 5.1286399962295E+01
A = 0.10  L = 6  N = 15    ROOT = 5.4387337790121E+01
A = 0.10  L = 6  N = 16    ROOT = 5.7479014396949E+01
A = 0.10  L = 6  N = 17    ROOT = 6.0578730274055E+01
A = 0.10  L = 6  N = 18    ROOT = 6.3704893703629E+01
A = 0.10  L = 6  N = 19    ROOT = 6.6869404173568E+01
A = 0.10  L = 6  N = 20    ROOT = 7.0075343863933E+01
A = 0.10  L = 6  N = 21    ROOT = 7.3319704354304E+01
A = 0.10  L = 6  N = 22    ROOT = 7.6597108413413E+01
A = 0.10  L = 6  N = 23    ROOT = 7.9901635204935E+01
A = 0.10  L = 6  N = 24    ROOT = 8.3228642232307E+01
A = 0.10  L = 6  N = 25    ROOT = 8.6574055390271E+01
A = 0.10  L = 6  N = 26    ROOT = 8.9334275605483E+01
A = 0.10  L = 6  N = 27    ROOT = 9.3308177192987E+01
A = 0.10  L = 6  N = 28    ROOT = 9.6692454178153E+01
A = 0.10  L = 6  N = 29    ROOT = 1.0008559644845E+02
A = 0.10  L = 6  N = 30    ROOT = 1.0348754541389E+02
```

ROOTS OF EQUATION 3

							ROOT =
A =	0.10	L =	7	N =	1	ROOT =	8.934830070351GE+00
A =	0.10	L =	7	N =	2	ROOT =	1.3472030353037E+01
A =	0.10	L =	7	N =	3	ROOT =	1.7117505724930E+01
A =	0.10	L =	7	N =	4	ROOT =	2.0559420003629E+01
A =	0.10	L =	7	N =	5	ROOT =	2.3906440879104E+01
A =	0.10	L =	7	N =	6	ROOT =	2.7199230700469E+01
A =	0.10	L =	7	N =	7	ROOT =	3.0457470495655E+01
A =	0.10	L =	7	N =	8	ROOT =	3.3692040358064E+01
A =	0.10	L =	7	N =	9	ROOT =	3.6909507064551E+01
A =	0.10	L =	7	N =	10	ROOT =	4.0113061747783E+01
A =	0.10	L =	7	N =	11	ROOT =	4.3307411245514E+01
A =	0.10	L =	7	N =	12	ROOT =	4.6491035226194E+01
A =	0.10	L =	7	N =	13	ROOT =	4.9664244463601E+01
A =	0.10	L =	7	N =	14	ROOT =	5.2825190985061E+01
A =	0.10	L =	7	N =	15	ROOT =	5.5970996909627E+01
A =	0.10	L =	7	N =	16	ROOT =	5.9098707907795E+01
A =	0.10	L =	7	N =	17	ROOT =	6.2207644532731E+01
A =	0.10	L =	7	N =	18	ROOT =	6.5302570217755E+01
A =	0.10	L =	7	N =	19	ROOT =	6.8395610900298E+01
A =	0.10	L =	7	N =	20	ROOT =	7.1503490128235E+01
A =	0.10	L =	7	N =	21	ROOT =	7.4641059060243E+01
A =	0.10	L =	7	N =	22	ROOT =	7.7816122804862E+01
A =	0.10	L =	7	N =	23	ROOT =	8.1029409501790E+01
A =	0.10	L =	7	N =	24	ROOT =	8.4277391902951E+01
A =	0.10	L =	7	N =	25	ROOT =	8.7555071149166E+01
A =	0.10	L =	7	N =	26	ROOT =	9.0857540561072E+01
A =	0.10	L =	7	N =	27	ROOT =	9.4180579534500E+01
A =	0.10	L =	7	N =	28	ROOT =	9.7520750705519E+01
A =	0.10	L =	7	N =	29	ROOT =	1.0087531065361E+02
A =	0.10	L =	7	N =	30	ROOT =	1.0424207682560E+02

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ROOTS OF EQUATION 3

							ROOT =
A =	0.10	L =	8	N =	1	ROOT =	1.0010370746203E+01
A =	0.10	L =	8	N =	2	ROOT =	1.4651262008317E+01
A =	0.10	L =	8	N =	3	ROOT =	1.8356318341665E+01
A =	0.10	L =	8	N =	4	ROOT =	2.1840012071687E+01
A =	0.10	L =	8	N =	5	ROOT =	2.5218652101159E+01
A =	0.10	L =	8	N =	6	ROOT =	2.8536460202221E+01
A =	0.10	L =	8	N =	7	ROOT =	3.1815102699757E+01
A =	0.10	L =	8	N =	8	ROOT =	3.5066753104436E+01
A =	0.10	L =	8	N =	9	ROOT =	3.8298072004743E+01
A =	0.10	L =	8	N =	10	ROOT =	4.1516299835125E+01
A =	0.10	L =	8	N =	11	ROOT =	4.4722269362171E+01
A =	0.10	L =	8	N =	12	ROOT =	4.7918098877765E+01
A =	0.10	L =	8	N =	13	ROOT =	5.1107415647409E+01
A =	0.10	L =	8	N =	14	ROOT =	5.4208101334140E+01
A =	0.10	L =	8	N =	15	ROOT =	5.7460627001300E+01
A =	0.10	L =	8	N =	16	ROOT =	6.0623160674213E+01
A =	0.10	L =	8	N =	17	ROOT =	6.3773276374870E+01
A =	0.10	L =	8	N =	18	ROOT =	6.6907995051303E+01
A =	0.10	L =	8	N =	19	ROOT =	7.0025333842500E+01
A =	0.10	L =	8	N =	20	ROOT =	7.3126701391389E+01
A =	0.10	L =	8	N =	21	ROOT =	7.6219421476206E+01
A =	0.10	L =	8	N =	22	ROOT =	7.9316799458464E+01
A =	0.10	L =	8	N =	23	ROOT =	8.2434037626172E+01
A =	0.10	L =	8	N =	24	ROOT =	8.5582524432736E+01
A =	0.10	L =	8	N =	25	ROOT =	8.8767017133521E+01
A =	0.10	L =	8	N =	26	ROOT =	9.1986730443007E+01
A =	0.10	L =	8	N =	27	ROOT =	9.5237954990112E+01
A =	0.10	L =	8	N =	28	ROOT =	9.8516145366104E+01
A =	0.10	L =	8	N =	29	ROOT =	1.0181700313306E+02
A =	0.10	L =	8	N =	30	ROOT =	1.0513685909769E+02

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ROOTS OF EQUATION 3

								ROOT
A =	0.10	L =	9	N =	1	ROOT =	1.1079418389950E+01
A =	0.10	L =	9	N =	2	ROOT =	1.5819215488944E+01
A =	0.10	L =	9	N =	3	ROOT =	1.9501089016005E+01
A =	0.10	L =	9	N =	4	ROOT =	2.3106568428214E+01
A =	0.10	L =	9	N =	5	ROOT =	2.6516602554113E+01
A =	0.10	L =	9	N =	6	ROOT =	2.9859492711052E+01
A =	0.10	L =	9	N =	7	ROOT =	3.3158753793303E+01
A =	0.10	L =	9	N =	8	ROOT =	3.6427717184023E+01
A =	0.10	L =	9	N =	9	ROOT =	3.9674629230176E+01
A =	0.10	L =	9	N =	10	ROOT =	4.2904912020004E+01
A =	0.10	L =	9	N =	11	ROOT =	4.6122290118903E+01
A =	0.10	L =	9	N =	12	ROOT =	4.9329394175173E+01
A =	0.10	L =	9	N =	13	ROOT =	5.2528091030286E+01
A =	0.10	L =	9	N =	14	ROOT =	5.5719650063438E+01
A =	0.10	L =	9	N =	15	ROOT =	5.8904796142757E+01
A =	0.10	L =	9	N =	16	ROOT =	6.2083675934187E+01
A =	0.10	L =	9	N =	17	ROOT =	6.5255762690154E+01
A =	0.10	L =	9	N =	18	ROOT =	6.8419744313573E+01
A =	0.10	L =	9	N =	19	ROOT =	7.1573489134856E+01
A =	0.10	L =	9	N =	20	ROOT =	7.4714276223772E+01
A =	0.10	L =	9	N =	21	ROOT =	7.7835995599870E+01
A =	0.10	L =	9	N =	22	ROOT =	8.0948818175590E+01
A =	0.10	L =	9	N =	23	ROOT =	8.4045516095383E+01
A =	0.10	L =	9	N =	24	ROOT =	8.7138964714529E+01
A =	0.10	L =	9	N =	25	ROOT =	9.0242643966021E+01
A =	0.10	L =	9	N =	26	ROOT =	9.3369653060020E+01
A =	0.10	L =	9	N =	27	ROOT =	9.6528353545401E+01
A =	0.10	L =	9	N =	28	ROOT =	9.9721237976528E+01
A =	0.10	L =	9	N =	29	ROOT =	1.0294659376687E+02
A =	0.10	L =	9	N =	30	ROOT =	1.0620071914651E+02

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ROOTS OF EQUATION 3

								ROOT
A =	0.10	L =	10	N =	1	ROOT =	1.2143204100943E+01
A =	0.10	L =	10	N =	2	ROOT =	1.6977549980165E+01
A =	0.10	L =	10	N =	3	ROOT =	2.0795967236928E+01
A =	0.10	L =	10	N =	4	ROOT =	2.4360789077212E+01
A =	0.10	L =	10	N =	5	ROOT =	2.7801885334662E+01
A =	0.10	L =	10	N =	6	ROOT =	3.1169806453606E+01
A =	0.10	L =	10	N =	7	ROOT =	3.4489794423744E+01
A =	0.10	L =	10	N =	8	ROOT =	3.7776260283676E+01
A =	0.10	L =	10	N =	9	ROOT =	4.1038203800649E+01
A =	0.10	L =	10	N =	10	ROOT =	4.4281547369807E+01
A =	0.10	L =	10	N =	11	ROOT =	4.7510414572429E+01
A =	0.10	L =	10	N =	12	ROOT =	5.0727757725776E+01
A =	0.10	L =	10	N =	13	ROOT =	5.3935747703607E+01
A =	0.10	L =	10	N =	14	ROOT =	5.7136001395220E+01
A =	0.10	L =	10	N =	15	ROOT =	6.0329711696213E+01
A =	0.10	L =	10	N =	16	ROOT =	6.3517705559923E+01
A =	0.10	L =	10	N =	17	ROOT =	6.6700456148360E+01
A =	0.10	L =	10	N =	18	ROOT =	6.9878013362730E+01
A =	0.10	L =	10	N =	19	ROOT =	7.3049931443715E+01
A =	0.10	L =	10	N =	20	ROOT =	7.6215146313537E+01
A =	0.10	L =	10	N =	21	ROOT =	7.9371898786001E+01
A =	0.10	L =	10	N =	22	ROOT =	8.2517804795186E+01
A =	0.10	L =	10	N =	23	ROOT =	8.5650203170401E+01
A =	0.10	L =	10	N =	24	ROOT =	8.8767619971698E+01
A =	0.10	L =	10	N =	25	ROOT =	9.1870777785298E+01
A =	0.10	L =	10	N =	26	ROOT =	9.4960519793486E+01
A =	0.10	L =	10	N =	27	ROOT =	9.8061762634973E+01
A =	0.10	L =	10	N =	28	ROOT =	1.0117295367772E+02
A =	0.10	L =	10	N =	29	ROOT =	1.0430969390586E+02
A =	0.10	L =	10	N =	30	ROOT =	1.0747780469753E+02

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ROOTS OF EQUATION 3

A = 0.10 L = 11 N = 1   ROOT = 1.3202620396820E+01
A = 0.10 L = 11 N = 2   ROOT = 1.8127564101091E+01
A = 0.10 L = 11 N = 3   ROOT = 2.1999955082452E+01
A = 0.10 L = 11 N = 4   ROOT = 2.5604056717769E+01
A = 0.10 L = 11 N = 5   ROOT = 2.9075816903035E+01
A = 0.10 L = 11 N = 6   ROOT = 3.2463634580403E+01
A = 0.10 L = 11 N = 7   ROOT = 3.5809372553680E+01
A = 0.10 L = 11 N = 8   ROOT = 3.9113473921369E+01
A = 0.10 L = 11 N = 9   ROOT = 4.2390611321428E+01
A = 0.10 L = 11 N = 10   ROOT = 4.5647220754196E+01
A = 0.10 L = 11 N = 11   ROOT = 4.8887782945704E+01
A = 0.10 L = 11 N = 12   ROOT = 5.2115529319691E+01
A = 0.10 L = 11 N = 13   ROOT = 5.5332856557642E+01
A = 0.10 L = 11 N = 14   ROOT = 5.8541581580762E+01
A = 0.10 L = 11 N = 15   ROOT = 6.1743102527936E+01
A = 0.10 L = 11 N = 16   ROOT = 6.4938499387574E+01
A = 0.10 L = 11 N = 17   ROOT = 6.8128591053054E+01
A = 0.10 L = 11 N = 18   ROOT = 7.1313955949543E+01
A = 0.10 L = 11 N = 19   ROOT = 7.4494918004668E+01
A = 0.10 L = 11 N = 20   ROOT = 7.7671497868167E+01
A = 0.10 L = 11 N = 21   ROOT = 8.0843331623420E+01
A = 0.10 L = 11 N = 22   ROOT = 8.4009567995721E+01
A = 0.10 L = 11 N = 23   ROOT = 8.7168774947389E+01
A = 0.10 L = 11 N = 24   ROOT = 9.0318325782669E+01
A = 0.10 L = 11 N = 25   ROOT = 9.3457601682010E+01
A = 0.10 L = 11 N = 26   ROOT = 9.6582626121010E+01
A = 0.10 L = 11 N = 27   ROOT = 9.9693336823315E+01
A = 0.10 L = 11 N = 28   ROOT = 1.0279238582222E+02
A = 0.10 L = 11 N = 29   ROOT = 1.0588692026454E+02
A = 0.10 L = 11 N = 30   ROOT = 1.0898905381807E+02

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ROOTS OF EQUATION 3

A = 0.10 L = 12 N = 1   ROOT = 1.4258340813425E+01
A = 0.10 L = 12 N = 2   ROOT = 1.9270293740244E+01
A = 0.10 L = 12 N = 3   ROOT = 2.3194996197805E+01
A = 0.10 L = 12 N = 4   ROUT = 2.6837518132342E+01
A = 0.10 L = 12 N = 5   ROOT = 3.0339504017372E+01
A = 0.10 L = 12 N = 6   ROOT = 3.3757026015082E+01
A = 0.10 L = 12 N = 7   ROOT = 3.7118473304125E+01
A = 0.10 L = 12 N = 8   ROOT = 4.0440258523798E+01
A = 0.10 L = 12 N = 9   ROOT = 4.3732713520147E+01
A = 0.10 L = 12 N = 10   ROOT = 4.7002744420694E+01
A = 0.10 L = 12 N = 11   ROOT = 5.0255179487468E+01
A = 0.10 L = 12 N = 12   ROOT = 5.3493514655112E+01
A = 0.10 L = 12 N = 13   ROOT = 5.6720353502467E+01
A = 0.10 L = 12 N = 14   ROOT = 5.9937680029859E+01
A = 0.10 L = 12 N = 15   ROOT = 6.3147036149854E+01
A = 0.10 L = 12 N = 16   ROOT = 6.6349635596717E+01
A = 0.10 L = 12 N = 17   ROOT = 6.9546444207656E+01
A = 0.10 L = 12 N = 18   ROOT = 7.2738228117383E+01
A = 0.10 L = 12 N = 19   ROOT = 7.5925580646255E+01
A = 0.10 L = 12 N = 20   ROOT = 7.9108927211619E+01
A = 0.10 L = 12 N = 21   ROOT = 8.2288507303013E+01
A = 0.10 L = 12 N = 22   ROOT = 8.5464331434173E+01
A = 0.10 L = 12 N = 23   ROOT = 8.8636112473411E+01
A = 0.10 L = 12 N = 24   ROOT = 9.1803176161612E+01
A = 0.10 L = 12 N = 25   ROOT = 9.4964368025824E+01
A = 0.10 L = 12 N = 26   ROOT = 9.8117998889577E+01
A = 0.10 L = 12 N = 27   ROOT = 1.0126191642042E+02
A = 0.10 L = 12 N = 28   ROOT = 1.0433385611180E+02
A = 0.10 L = 12 N = 29   ROOT = 1.0751227132595E+02
A = 0.10 L = 12 N = 30   ROOT = 1.1061772654744E+02

ROOTS OF EQUATION 3

A =	0.10	L =	13	N =	1	ROOT =	1.5310007383710E+01
A =	0.10	L =	13	N =	2	ROOT =	2.0465500041239E+01
A =	0.10	L =	13	N =	3	ROOT =	2.4302037523109E+01
A =	0.10	L =	13	N =	4	ROOT =	2.8062136676737E+01
A =	0.10	L =	13	N =	5	ROOT =	3.1593807676537E+01
A =	0.10	L =	13	N =	6	ROOT =	3.5035081842492E+01
A =	0.10	L =	13	N =	7	ROOT =	3.8417950526127E+01
A =	0.10	L =	13	N =	8	ROOT =	4.1757425640639E+01
A =	0.10	L =	13	N =	9	ROOT =	4.5065266504368E+01
A =	0.10	L =	13	N =	10	ROOT =	4.8340828518330E+01
A =	0.10	L =	13	N =	11	ROOT =	5.1613273273005E+01
A =	0.10	L =	13	N =	12	ROOT =	5.4862350973438E+01
A =	0.10	L =	13	N =	13	ROOT =	5.8098863643046E+01
A =	0.10	L =	13	N =	14	ROOT =	6.1324953650333E+01
A =	0.10	L =	13	N =	15	ROOT =	6.4542290956741E+01
A =	0.10	L =	13	N =	16	ROOT =	6.7752198566525E+01
A =	0.10	L =	13	N =	17	ROOT =	7.0955730841205E+01
A =	0.10	L =	13	N =	18	ROOT =	7.4153773430611E+01
A =	0.10	L =	13	N =	19	ROOT =	7.7347804461195E+01
A =	0.10	L =	13	N =	20	ROOT =	8.0536000031400E+01
A =	0.10	L =	13	N =	21	ROOT =	8.3721210962723E+01
A =	0.10	L =	13	N =	22	ROOT =	8.6902961390400E+01
A =	0.10	L =	13	N =	23	ROOT =	9.0081439250463E+01
A =	0.10	L =	13	N =	24	ROOT =	9.3256655903660E+01
A =	0.10	L =	13	N =	25	ROOT =	9.6420390189550E+01
A =	0.10	L =	13	N =	26	ROOT =	9.9596112492295E+01
A =	0.10	L =	13	N =	27	ROOT =	1.0275089894350E+02
A =	0.10	L =	13	N =	28	ROOT =	1.0591536069607E+02
A =	0.10	L =	13	N =	29	ROOT =	1.0906364311469E+02
A =	0.10	L =	13	N =	30	ROOT =	1.1220159058873E+02

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ROOTS OF EQUATION 3

A =	0.10	L =	14	N =	1	ROOT =	1.6360673740457E+01
A =	0.10	L =	14	N =	2	ROOT =	2.1537128330219E+01
A =	0.10	L =	14	N =	3	ROOT =	2.5561073317037E+01
A =	0.10	L =	14	N =	4	ROOT =	2.9278730649054E+01
A =	0.10	L =	14	N =	5	ROOT =	3.2839775732116E+01
A =	0.10	L =	14	N =	6	ROOT =	3.6305982794335E+01
A =	0.10	L =	14	N =	7	ROOT =	3.9708550020792E+01
A =	0.10	L =	14	N =	8	ROOT =	4.3065683832965E+01
A =	0.10	L =	14	N =	9	ROOT =	4.6389393460442E+01
A =	0.10	L =	14	N =	10	ROOT =	4.9686104572224E+01
A =	0.10	L =	14	N =	11	ROOT =	5.2962659992243E+01
A =	0.10	L =	14	N =	12	ROOT =	5.6222600010893E+01
A =	0.10	L =	14	N =	13	ROOT =	5.9468920010573E+01
A =	0.10	L =	14	N =	14	ROOT =	6.2703915022061E+01
A =	0.10	L =	14	N =	15	ROOT =	6.5929377157640E+01
A =	0.10	L =	14	N =	16	ROOT =	6.9146732169455E+01
A =	0.10	L =	14	N =	17	ROOT =	7.2357128090002E+01
A =	0.10	L =	14	N =	18	ROOT =	7.5561501047903E+01
A =	0.10	L =	14	N =	19	ROOT =	7.8760621971929E+01
A =	0.10	L =	14	N =	20	ROOT =	8.1955130189733E+01
A =	0.10	L =	14	N =	21	ROOT =	8.5145569102910E+01
A =	0.10	L =	14	N =	22	ROOT =	8.8332340021009E+01
A =	0.10	L =	14	N =	23	ROOT =	9.1515030003030E+01
A =	0.10	L =	14	N =	24	ROOT =	9.4696206679700E+01
A =	0.10	L =	14	N =	25	ROOT =	9.7873862032144E+01
A =	0.10	L =	14	N =	26	ROOT =	1.0104057500200E+02
A =	0.10	L =	14	N =	27	ROOT =	1.0422825700570E+02
A =	0.10	L =	14	N =	28	ROOT =	1.0738049505674E+02
A =	0.10	L =	14	N =	29	ROOT =	1.1055255677739E+02
A =	0.10	L =	14	N =	30	ROOT =	1.1371130901020E+02

ROOTS OF EQUATION 3

		ROOT
A = 0.10 L = 15 N = 1	ROOT =	1.7400033003007E+01
A = 0.10 L = 15 N = 2	ROOT =	2.2662493433694E+01
A = 0.10 L = 15 N = 3	ROOT =	2.6735177305379E+01
A = 0.10 L = 15 N = 4	ROOT =	3.0408001947915E+01
A = 0.10 L = 15 N = 5	ROOT =	3.4077867704402E+01
A = 0.10 L = 15 N = 6	ROOT =	3.7560010495456E+01
A = 0.10 L = 15 N = 7	ROOT =	4.0990927670117E+01
A = 0.10 L = 15 N = 8	ROOT =	4.4365657182400E+01
A = 0.10 L = 15 N = 9	ROOT =	4.7704320183463E+01
A = 0.10 L = 15 N = 10	ROOT =	5.1015137766763E+01
A = 0.10 L = 15 N = 11	ROOT =	5.4303875082655E+01
A = 0.10 L = 15 N = 12	ROOT =	5.7574771324118E+01
A = 0.10 L = 15 N = 13	ROOT =	6.0831005407363E+01
A = 0.10 L = 15 N = 14	ROOT =	6.4075020486804E+01
A = 0.10 L = 15 N = 15	ROOT =	6.7308739370166E+01
A = 0.10 L = 15 N = 16	ROOT =	7.0533658777375E+01
A = 0.10 L = 15 N = 17	ROOT =	7.3751036007555E+01
A = 0.10 L = 15 N = 18	ROOT =	7.6961867677528E+01
A = 0.10 L = 15 N = 19	ROOT =	8.0166984592245E+01
A = 0.10 L = 15 N = 20	ROOT =	8.3367079486475E+01
A = 0.10 L = 15 N = 21	ROOT =	8.6562734384448E+01
A = 0.10 L = 15 N = 22	ROOT =	8.9754440298291E+01
A = 0.10 L = 15 N = 23	ROOT =	9.2942612203097E+01
A = 0.10 L = 15 N = 24	ROOT =	9.6127596893093E+01
A = 0.10 L = 15 N = 25	ROOT =	9.9309676132296E+01
A = 0.10 L = 15 N = 26	ROOT =	1.0248906227105E+02
A = 0.10 L = 15 N = 27	ROOT =	1.0566588505635E+02
A = 0.10 L = 15 N = 28	ROOT =	1.0884016726882E+02
A = 0.10 L = 15 N = 29	ROOT =	1.1201178695559E+02
A = 0.10 L = 15 N = 30	ROOT =	1.1518042507804E+02

ROOTS OF EQUATION 3

		ROOT
A = 0.20 L = 1 N = 1	ROOT =	2.0564816363988E+00
A = 0.20 L = 1 N = 2	ROOT =	5.7957002217553E+00
A = 0.20 L = 1 N = 3	ROOT =	9.1069959389746E+00
A = 0.20 L = 1 N = 4	ROOT =	1.2651128654798E+01
A = 0.20 L = 1 N = 5	ROOT =	1.6360461103763E+01
A = 0.20 L = 1 N = 6	ROOT =	2.0154342549586E+01
A = 0.20 L = 1 N = 7	ROOT =	2.3992867524088E+01
A = 0.20 L = 1 N = 8	ROOT =	2.7857082293111E+01
A = 0.20 L = 1 N = 9	ROOT =	3.1737277669547E+01
A = 0.20 L = 1 N = 10	ROOT =	3.5628053017271E+01
A = 0.20 L = 1 N = 11	ROOT =	3.9526185496454E+01
A = 0.20 L = 1 N = 12	ROOT =	4.3429638266990E+01
A = 0.20 L = 1 N = 13	ROOT =	4.7337062416085E+01
A = 0.20 L = 1 N = 14	ROOT =	5.1247529571948E+01
A = 0.20 L = 1 N = 15	ROOT =	5.5160379972943E+01
A = 0.20 L = 1 N = 16	ROOT =	5.9075131803948E+01
A = 0.20 L = 1 N = 17	ROOT =	6.2991425330364E+01
A = 0.20 L = 1 N = 18	ROOT =	6.6908805898116E+01
A = 0.20 L = 1 N = 19	ROOT =	7.0827600724224E+01
A = 0.20 L = 1 N = 20	ROOT =	7.4747182144388E+01
A = 0.20 L = 1 N = 21	ROOT =	7.9667356292613E+01
A = 0.20 L = 1 N = 22	ROOT =	8.2588254987209E+01
A = 0.20 L = 1 N = 23	ROOT =	8.6509709840358E+01
A = 0.20 L = 1 N = 24	ROOT =	9.0431647962354E+01
A = 0.20 L = 1 N = 25	ROOT =	9.4354008637965E+01
A = 0.20 L = 1 N = 26	ROOT =	9.8276740946586E+01
A = 0.20 L = 1 N = 27	ROOT =	1.0219980183387E+02
A = 0.20 L = 1 N = 28	ROOT =	1.0612315465355E+02
A = 0.20 L = 1 N = 29	ROOT =	1.1004676001730E+02
A = 0.20 L = 1 N = 30	ROOT =	1.1397061408303E+02

ROOTS OF EQUATION 3

A = 0.20	L = 2	N = 1	ROOT = 3.3383045110450E+00
A = 0.20	L = 2	N = 2	ROOT = 7.2234780713998E+00
A = 0.20	L = 2	N = 3	ROOT = 1.0407963157024E+01
A = 0.20	L = 2	N = 4	ROOT = 1.3629306879281E+01
A = 0.20	L = 2	N = 5	ROOT = 1.7088447690421E+01
A = 0.20	L = 2	N = 6	ROOT = 2.0711741905192E+01
A = 0.20	L = 2	N = 7	ROOT = 2.4446146023795E+01
A = 0.20	L = 2	N = 8	ROOT = 2.8239229017744E+01
A = 0.20	L = 2	N = 9	ROOT = 3.2067907633112E+01
A = 0.20	L = 2	N = 10	ROOT = 3.5919634641109E+01
A = 0.20	L = 2	N = 11	ROOT = 3.9787116431853E+01
A = 0.20	L = 2	N = 12	ROOT = 4.3665845049668E+01
A = 0.20	L = 2	N = 13	ROOT = 4.7552887429522E+01
A = 0.20	L = 2	N = 14	ROOT = 5.1446252661936E+01
A = 0.20	L = 2	N = 15	ROOT = 5.5345451150752E+01
A = 0.20	L = 2	N = 16	ROOT = 5.9246739708173E+01
A = 0.20	L = 2	N = 17	ROOT = 6.3152096433510E+01
A = 0.20	L = 2	N = 18	ROOT = 6.7060041337433E+01
A = 0.20	L = 2	N = 19	ROOT = 7.0970134303978E+01
A = 0.20	L = 2	N = 20	ROOT = 7.4882029980014E+01
A = 0.20	L = 2	N = 21	ROOT = 7.8795435393313E+01
A = 0.20	L = 2	N = 22	ROOT = 8.2710183441476E+01
A = 0.20	L = 2	N = 23	ROOT = 8.6626039141152E+01
A = 0.20	L = 2	N = 24	ROOT = 9.0542871970195E+01
A = 0.20	L = 2	N = 25	ROOT = 9.4460558421446E+01
A = 0.20	L = 2	N = 26	ROOT = 9.8378949698335E+01
A = 0.20	L = 2	N = 27	ROOT = 1.0229809423206E+02
A = 0.20	L = 2	N = 28	ROOT = 1.0621778192105E+02
A = 0.20	L = 2	N = 29	ROOT = 1.1013759446484E+02
A = 0.20	L = 2	N = 30	ROOT = 1.1405867149017E+02

ROOTS OF EQUATION 3

A = 0.20	L = 3	N = 1	ROOT = 4.5136764283096E+00
A = 0.20	L = 3	N = 2	ROOT = 8.5685259389504E+00
A = 0.20	L = 3	N = 3	ROOT = 1.1879319518400E+01
A = 0.20	L = 3	N = 4	ROOT = 1.5007143031785E+01
A = 0.20	L = 3	N = 5	ROOT = 1.8187315389141E+01
A = 0.20	L = 3	N = 6	ROOT = 2.1574239795671E+01
A = 0.20	L = 3	N = 7	ROOT = 2.5141001084826E+01
A = 0.20	L = 3	N = 8	ROOT = 2.8820472276179E+01
A = 0.20	L = 3	N = 9	ROOT = 3.2568217696624E+01
A = 0.20	L = 3	N = 10	ROOT = 3.6359619609245E+01
A = 0.20	L = 3	N = 11	ROOT = 4.0180119611663E+01
A = 0.20	L = 3	N = 12	ROOT = 4.4021188903373E+01
A = 0.20	L = 3	N = 13	ROOT = 4.7877316473831E+01
A = 0.20	L = 3	N = 14	ROOT = 5.1744816069033E+01
A = 0.20	L = 3	N = 15	ROOT = 5.5621124420046E+01
A = 0.20	L = 3	N = 16	ROOT = 5.9504401467652E+01
A = 0.20	L = 3	N = 17	ROOT = 6.3393290379957E+01
A = 0.20	L = 3	N = 18	ROOT = 6.7286767666513E+01
A = 0.20	L = 3	N = 19	ROOT = 7.1184046102043E+01
A = 0.20	L = 3	N = 20	ROOT = 7.5084509882807E+01
A = 0.20	L = 3	N = 21	ROOT = 7.8987670121187E+01
A = 0.20	L = 3	N = 22	ROOT = 8.2893133600833E+01
A = 0.20	L = 3	N = 23	ROOT = 8.6800580352660E+01
A = 0.20	L = 3	N = 24	ROOT = 9.0709742924867E+01
A = 0.20	L = 3	N = 25	ROOT = 9.4620416074816E+01
A = 0.20	L = 3	N = 26	ROOT = 9.8532403924788E+01
A = 0.20	L = 3	N = 27	ROOT = 1.0244555666729E+02
A = 0.20	L = 3	N = 28	ROOT = 1.0635974332142E+02
A = 0.20	L = 3	N = 29	ROOT = 1.1027485188599E+02
A = 0.20	L = 3	N = 30	ROOT = 1.1419078601321E+02

ROOTS OF EQUATION 3

```
A =  0.20  L =  4  N =   1      ROOT =  5.6466603460051E+00
A =  0.20  L =  4  N =   2      ROOT =  9.8378012118479E+00
A =  0.20  L =  4  N =   3      ROOT =  1.3269996015536E+01
A =  0.20  L =  4  N =   4      ROOT =  1.6499009627464E+01
A =  0.20  L =  4  N =   5      ROOT =  1.9607871379004E+01
A =  0.20  L =  4  N =   6      ROOT =  2.2762981589574E+01
A =  0.20  L =  4  N =   7      ROOT =  2.6102004891618E+01
A =  0.20  L =  4  N =   8      ROOT =  2.9615644827480E+01
A =  0.20  L =  4  N =   9      ROOT =  3.3246745703648E+01
A =  0.20  L =  4  N =  10      ROOT =  3.6952686627267E+01
A =  0.20  L =  4  N =  11      ROOT =  4.0707973292255E+01
A =  0.20  L =  4  N =  12      ROOT =  4.4497398025417E+01
A =  0.20  L =  4  N =  13      ROOT =  4.8311472110864E+01
A =  0.20  L =  4  N =  14      ROOT =  5.2143977065402E+01
A =  0.20  L =  4  N =  15      ROOT =  5.5990657882244E+01
A =  0.20  L =  4  N =  16      ROOT =  5.9848496277305E+01
A =  0.20  L =  4  N =  17      ROOT =  6.3715286321669E+01
A =  0.20  L =  4  N =  18      RCOT =  6.7589375066813E+01
A =  0.20  L =  4  N =  19      ROOT =  7.1469497521108E+01
A =  0.20  L =  4  N =  20      ROOT =  7.5354667957139E+01
A =  0.20  L =  4  N =  21      POUT =  7.9244106156207E+01
A =  0.20  L =  4  N =  22      ROOT =  8.3137186054436E+01
A =  0.20  L =  4  N =  23      ROOT =  8.7033339175788E+01
A =  0.20  L =  4  N =  24      ROOT =  9.0932320076913E+01
A =  0.20  L =  4  N =  25      ROOT =  9.4833626724218E+01
A =  0.20  L =  4  N =  26      POOT =  9.8737005767008E+01
A =  0.20  L =  4  N =  27      ROOT =  1.0264222133034E+02
A =  0.20  L =  4  N =  28      POOT =  1.0654906637874E+02
A =  0.20  L =  4  N =  29      POOT =  1.1045736398475E+02
A =  0.20  L =  4  N =  30      POOT =  1.1436696202748E+02
```

ROOTS OF EQUATION 3

```
A =  0.20  L =  5  N =   1      ROOT =  6.7564521721165E+00
A =  0.20  L =  5  N =   2      ROOT =  1.1069810606503E+01
A =  0.20  L =  5  N =   3      POOT =  1.4585093999728E+01
A =  0.20  L =  5  N =   4      POOT =  1.7913458036495E+01
A =  0.20  L =  5  N =   5      POOT =  2.1110238221385E+01
A =  0.20  L =  5  N =   6      ROOT =  2.4211152893905E+01
A =  0.20  L =  5  N =   7      ROOT =  2.7349049516913E+01
A =  0.20  L =  5  N =   8      ROOT =  3.0650435286005E+01
A =  0.20  L =  5  N =   9      POOT =  3.4119546876750E+01
A =  0.20  L =  5  N =  10      ROOT =  3.7708233721408E+01
A =  0.20  L =  5  N =  11      POOT =  4.1376136467382E+01
A =  0.20  L =  5  N =  12      POOT =  4.5097769042137E+01
A =  0.20  L =  5  N =  13      ROOT =  4.8857432668403E+01
A =  0.20  L =  5  N =  14      POOT =  5.2645100445088E+01
A =  0.20  L =  5  N =  15      POOT =  5.6454070961920E+01
A =  0.20  L =  5  N =  16      ROOT =  6.0279677620066E+01
A =  0.20  L =  5  N =  17      POOT =  6.4118556746798E+01
A =  0.20  L =  5  N =  18      POOT =  6.7968213629224E+01
A =  0.20  L =  5  N =  19      ROOT =  7.1826753606073E+01
A =  0.20  L =  5  N =  20      POOT =  7.5692708729513E+01
A =  0.20  L =  5  N =  21      ROOT =  7.9564922146386E+01
A =  0.20  L =  5  N =  22      ROOT =  8.3442468680572E+01
A =  0.20  L =  5  N =  23      POOT =  8.7324598884968E+01
A =  0.20  L =  5  N =  24      POOT =  9.1210698754735E+01
A =  0.20  L =  5  N =  25      POOT =  9.5100260157876E+01
A =  0.20  L =  5  N =  26      ROOT =  9.8992858763646E+01
A =  0.20  L =  5  N =  27      ROOT =  1.0288813731967E+02
A =  0.20  L =  5  N =  28      ROOT =  1.0678579281120E+02
A =  0.20  L =  5  N =  29      ROOT =  1.1068556640202E+02
A =  0.20  L =  5  N =  30      ROOT =  1.1458723599435E+02
```

ROOTS OF EQUATION 3

A = 0.20	L = 6	N = 1	ROOT =	7.851077295949E+00
A = 0.20	L = 6	N = 2	ROOT =	1.227920007746E+01
A = 0.20	L = 6	N = 3	ROOT =	1.586221586457E+01
A = 0.20	L = 6	N = 4	ROOT =	1.925447365310E+01
A = 0.20	L = 6	N = 5	ROOT =	2.253813142378E+01
A = 0.20	L = 6	N = 6	ROOT =	2.571879448170E+01
A = 0.20	L = 6	N = 7	ROOT =	2.881657758377E+01
A = 0.20	L = 6	N = 8	ROOT =	3.194192391544E+01
A = 0.20	L = 6	N = 9	ROOT =	3.521267284432E+01
A = 0.20	L = 6	N = 10	ROOT =	3.864722339602E+01
A = 0.20	L = 6	N = 11	ROOT =	4.219496547576E+01
A = 0.20	L = 6	N = 12	ROOT =	4.582844289832E+01
A = 0.20	L = 6	N = 13	ROOT =	4.951896233627E+01
A = 0.20	L = 6	N = 14	ROOT =	5.325058771498E+01
A = 0.20	L = 6	N = 15	ROOT =	5.701295619498E+01
A = 0.20	L = 6	N = 16	ROOT =	6.079903912626E+01
A = 0.20	L = 6	N = 17	ROOT =	6.460387620236E+01
A = 0.20	L = 6	N = 18	ROOT =	6.842384695055E+01
A = 0.20	L = 6	N = 19	ROOT =	7.225623429630E+01
A = 0.20	L = 6	N = 20	ROOT =	7.609895169253E+01
A = 0.20	L = 6	N = 21	ROOT =	7.995036568710E+01
A = 0.20	L = 6	N = 22	ROOT =	8.380917652368E+01
A = 0.20	L = 6	N = 23	ROOT =	8.767433539101E+01
A = 0.20	L = 6	N = 24	ROOT =	9.154498560262E+01
A = 0.20	L = 6	N = 25	ROOT =	9.542041986543E+01
A = 0.20	L = 6	N = 26	ROOT =	9.930004864383E+01
A = 0.20	L = 6	N = 27	ROOT =	1.031833763468E+02
A = 0.20	L = 6	N = 28	ROOT =	1.070699831402E+02
A = 0.20	L = 6	N = 29	ROOT =	1.109595108725E+02
A = 0.20	L = 6	N = 30	ROOT =	1.148516520567E+02

ROOTS OF EQUATION 3

A = 0.20	L = 7	N = 1	ROOT =	8.934838843998E+00
A = 0.20	L = 7	N = 2	ROOT =	1.347202351728E+01
A = 0.20	L = 7	N = 3	ROOT =	1.711733851896E+01
A = 0.20	L = 7	N = 4	ROOT =	2.055768040567E+01
A = 0.20	L = 7	N = 5	ROOT =	2.389570955164E+01
A = 0.20	L = 7	N = 6	ROOT =	2.715470574262E+01
A = 0.20	L = 7	N = 7	ROOT =	3.032657162469E+01
A = 0.20	L = 7	N = 8	ROOT =	3.342364764707E+01
A = 0.20	L = 7	N = 9	ROOT =	3.653957060777E+01
A = 0.20	L = 7	N = 10	ROOT =	3.978476353498E+01
A = 0.20	L = 7	N = 11	ROOT =	4.318271754017E+01
A = 0.20	L = 7	N = 12	ROOT =	4.670058260354E+01
A = 0.20	L = 7	N = 13	ROOT =	5.030280747413E+01
A = 0.20	L = 7	N = 14	ROOT =	5.396463803388E+01
A = 0.20	L = 7	N = 15	ROOT =	5.767001560234E+01
A = 0.20	L = 7	N = 16	ROOT =	6.140830822444E+01
A = 0.20	L = 7	N = 17	ROOT =	6.517249520901E+01
A = 0.20	L = 7	N = 18	ROOT =	6.895716652430E+01
A = 0.20	L = 7	N = 19	ROOT =	7.275859206678E+01
A = 0.20	L = 7	N = 20	ROOT =	7.657388552496E+01
A = 0.20	L = 7	N = 21	ROOT =	8.040081027059E+01
A = 0.20	L = 7	N = 22	ROOT =	8.423760020896E+01
A = 0.20	L = 7	N = 23	ROOT =	8.808283845784E+01
A = 0.20	L = 7	N = 24	ROOT =	9.193537286484E+01
A = 0.20	L = 7	N = 25	ROOT =	9.579425548262E+01
A = 0.20	L = 7	N = 26	ROOT =	9.965869033845E+01
A = 0.20	L = 7	N = 27	ROOT =	1.035280404590E+02
A = 0.20	L = 7	N = 28	ROOT =	1.074017288158E+02
A = 0.20	L = 7	N = 29	ROOT =	1.112792694396E+02
A = 0.20	L = 7	N = 30	ROOT =	1.151602717983E+02

ROOTS OF EQUATION 3

					ROOT
A = 0.20	L = 8	N = 1	ROOT =	1.0010370743273E+01
A = 0.20	L = 8	N = 2	ROOT =	1.4651261086830E+01
A = 0.20	L = 8	N = 3	ROOT =	1.8356292660696E+01
A = 0.20	L = 8	N = 4	ROOT =	2.1839677531767E+01
A = 0.20	L = 8	N = 5	ROOT =	2.5216123610093E+01
A = 0.20	L = 8	N = 6	ROOT =	2.8523565176607E+01
A = 0.20	L = 8	N = 7	ROOT =	3.1767217209310E+01
A = 0.20	L = 8	N = 8	ROOT =	3.4934187699685E+01
A = 0.20	L = 8	N = 9	ROOT =	3.8031955395499E+01
A = 0.20	L = 8	N = 10	ROOT =	4.1140726042024E+01
A = 0.20	L = 8	N = 11	ROOT =	4.4364234534022E+01
A = 0.20	L = 8	N = 12	ROOT =	4.7733002951464E+01
A = 0.20	L = 8	N = 13	ROOT =	5.1220819233017E+01
A = 0.20	L = 8	N = 14	ROOT =	5.4794517374925E+01
A = 0.20	L = 8	N = 15	ROOT =	5.8429033021657E+01
A = 0.20	L = 8	N = 16	ROOT =	6.2118707463038E+01
A = 0.20	L = 8	N = 17	ROOT =	6.5826424078270E+01
A = 0.20	L = 8	N = 18	ROOT =	6.9569572442876E+01
A = 0.20	L = 8	N = 19	ROOT =	7.3334030911096E+01
A = 0.20	L = 8	N = 20	ROOT =	7.7118248922527E+01
A = 0.20	L = 8	N = 21	ROOT =	8.0916811806795E+01
A = 0.20	L = 8	N = 22	ROOT =	8.4726166427522E+01
A = 0.20	L = 8	N = 23	ROOT =	8.8550441380688E+01
A = 0.20	L = 8	N = 24	ROOT =	9.2382124948817E+01
A = 0.20	L = 8	N = 25	ROOT =	9.6221979685516E+01
A = 0.20	L = 8	N = 26	ROOT =	1.0006898104534E+02
A = 0.20	L = 8	N = 27	ROOT =	1.0392227226673E+02
A = 0.20	L = 8	N = 28	ROOT =	1.0778113069575E+02
A = 0.20	L = 8	N = 29	ROOT =	1.1164494179663E+02
A = 0.20	L = 8	N = 30	ROOT =	1.1551317955392E+02

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ROOTS OF EQUATION 3

					ROOT
A = 0.20	L = 9	N = 1	ROOT =	1.1079418389691E+01
A = 0.20	L = 9	N = 2	ROOT =	1.5819215394351E+01
A = 0.20	L = 9	N = 3	ROOT =	1.9581885313310E+01
A = 0.20	L = 9	N = 4	ROOT =	2.3106509400438E+01
A = 0.20	L = 9	N = 5	ROOT =	2.6516063964069E+01
A = 0.20	L = 9	N = 6	ROOT =	2.9856201043481E+01
A = 0.20	L = 9	N = 7	ROOT =	3.3144857050035E+01
A = 0.20	L = 9	N = 8	ROOT =	3.6377482934822E+01
A = 0.20	L = 9	N = 9	ROOT =	3.9541853541754E+01
A = 0.20	L = 9	N = 10	ROOT =	4.2641187452486E+01
A = 0.20	L = 9	N = 11	ROOT =	4.5744548514579E+01
A = 0.20	L = 9	N = 12	ROOT =	4.8949440126859E+01
A = 0.20	L = 9	N = 13	ROOT =	5.2292176587479E+01
A = 0.20	L = 9	N = 14	ROOT =	5.5752693390004E+01
A = 0.20	L = 9	N = 15	ROOT =	5.9300192051284E+01
A = 0.20	L = 9	N = 16	ROOT =	6.2910944797560E+01
A = 0.20	L = 9	N = 17	ROOT =	6.6568908438784E+01
A = 0.20	L = 9	N = 18	ROOT =	7.0263266874389E+01
A = 0.20	L = 9	N = 19	ROOT =	7.3986493376911E+01
A = 0.20	L = 9	N = 20	ROOT =	7.7733153756602E+01
A = 0.20	L = 9	N = 21	ROOT =	8.1499192202788E+01
A = 0.20	L = 9	N = 22	ROOT =	8.5281496376967E+01
A = 0.20	L = 9	N = 23	ROOT =	8.9077622865407E+01
A = 0.20	L = 9	N = 24	ROOT =	9.2885617120087E+01
A = 0.20	L = 9	N = 25	ROOT =	9.6703891159915E+01
A = 0.20	L = 9	N = 26	ROOT =	1.0053113772513E+02
A = 0.20	L = 9	N = 27	ROOT =	1.0436626858596E+02
A = 0.20	L = 9	N = 28	ROOT =	1.0820836897134E+02
A = 0.20	L = 9	N = 29	ROOT =	1.1205666334323E+02
A = 0.20	L = 9	N = 30	ROOT =	1.1591048921340E+02

ROOTS OF EQUATION 3

```
A =  0.20   L = 10   N =  1      ROOT =  1.2143204100921E+01
A =  0.20   L = 10   N =  2      ROOT =  1.6977549969650E+01
A =  0.20   L = 10   N =  3      ROOT =  2.0795966730023E+01
A =  0.20   L = 10   N =  4      ROOT =  2.4360779340054E+01
A =  0.20   L = 10   N =  5      ROOT =  2.7801779596484E+01
A =  0.20   L = 10   N =  6      ROOT =  3.1169043714539E+01
A =  0.20   L = 10   N =  7      ROOT =  3.4485791183777E+01
A =  0.20   L = 10   N =  8      ROOT =  3.7760101569936E+01
A =  0.20   L = 10   N =  9      ROOT =  4.0986415558395E+01
A =  0.20   L = 10   N = 10      ROOT =  4.4149626183441E+01
A =  0.20   L = 10   N = 11      ROOT =  4.7251104358165E+01
A =  0.20   L = 10   N = 12      ROOT =  5.0350445896056E+01
A =  0.20   L = 10   N = 13      ROOT =  5.3539229414897E+01
A =  0.20   L = 10   N = 14      ROOT =  5.6858536070676E+01
A =  0.20   L = 10   N = 15      ROOT =  6.0294049216265E+01
A =  0.20   L = 10   N = 16      ROOT =  6.3817336651442E+01
A =  0.20   L = 10   N = 17      ROOT =  6.7405236964926E+01
A =  0.20   L = 10   N = 18      ROOT =  7.1041743820168E+01
A =  0.20   L = 10   N = 19      ROOT =  7.4715963741833E+01
A =  0.20   L = 10   N = 20      ROOT =  7.8420278413322E+01
A =  0.20   L = 10   N = 21      ROOT =  8.2149166674337E+01
A =  0.20   L = 10   N = 22      ROOT =  8.5898492096057E+01
A =  0.20   L = 10   N = 23      ROOT =  8.9665067284974E+01
A =  0.20   L = 10   N = 24      ROOT =  9.3446378686625E+01
A =  0.20   L = 10   N = 25      ROOT =  9.2240406208976E+01
A =  0.20   L = 10   N = 26      ROOT =  1.0104550073720E+02
A = -0.20   L = 10   N = 27      ROOT =  1.0486029023916E+02
A =  0.20   L = 10   N = 28      ROOT =  1.0868365785950E+02
A =  0.20   L = 10   N = 29      ROOT =  1.1251461621107E+02
A =  0.20   L = 10   N = 30      ROOT =  1.1635235293201E+02
```

ROOTS OF EQUATION 3

```
A =  0.20   L = 11   N =  1      ROOT =  1.3202620396026E+01
A =  0.20   L = 11   N =  2      ROOT =  1.8127564099995E+01
A =  0.20   L = 11   N =  3      ROOT =  2.1999955015998E+01
A =  0.20   L = 11   N =  4      ROOT =  2.5604055199057E+01
A =  0.20   L = 11   N =  5      ROOT =  2.9075797513414E+01
A =  0.20   L = 11   N =  6      ROOT =  3.2468471420225E+01
A =  0.20   L = 11   N =  7      ROOT =  3.5808378930323E+01
A =  0.20   L = 11   N =  8      ROOT =  3.9108827468126E+01
A =  0.20   L = 11   N =  9      ROOT =  4.2373272995123E+01
A =  0.20   L = 11   N = 10      ROOT =  4.5594509586057E+01
A =  0.20   L = 11   N = 11      ROOT =  4.8757504290664E+01
A =  0.20   L = 11   N = 12      ROOT =  5.1861521469425E+01
A =  0.20   L = 11   N = 13      ROOT =  5.4957983030165E+01
A =  0.20   L = 11   N = 14      ROOT =  5.8132764030568E+01
A =  0.20   L = 11   N = 15      ROOT =  6.1430833524193E+01
A =  0.20   L = 11   N = 16      ROOT =  6.4843283610130E+01
A =  0.20   L = 11   N = 17      ROOT =  6.8344065093053E+01
A =  0.20   L = 11   N = 18      ROOT =  7.1910613581505E+01
A =  0.20   L = 11   N = 19      ROOT =  7.5526972154930E+01
A =  0.20   L = 11   N = 20      ROOT =  7.9182180906838E+01
A =  0.20   L = 11   N = 21      ROOT =  8.2868543517687E+01
A =  0.20   L = 11   N = 22      ROOT =  8.6580467876222E+01
A =  0.20   L = 11   N = 23      ROOT =  9.0313753725294E+01
A =  0.20   L = 11   N = 24      ROOT =  9.4065154966902E+01
A =  0.20   L = 11   N = 25      ROOT =  9.7832103118549E+01
A =  0.20   L = 11   N = 26      ROOT =  1.0161252630140E+02
A =  0.20   L = 11   N = 27      ROOT =  1.0540472650490E+02
A =  0.20   L = 11   N = 28      ROOT =  1.0920729362035E+02
A =  0.20   L = 11   N = 29      ROOT =  1.1301904354203E+02
A =  0.20   L = 11   N = 30      ROOT =  1.1683097234250E+02
```

ROOTS OF EQUATION 3

A =	0.20	L =	12	N =	1	ROOT =	1.4250340813425E+01
A =	0.20	L =	12	N =	2	ROOT =	1.9270293740124E+01
A =	0.20	L =	12	N =	3	ROOT =	2.3194996109408E+01
A =	0.20	L =	12	N =	4	ROOT =	2.6837517906523E+01
A =	0.20	L =	12	N =	5	ROOT =	3.0339580662646E+01
A =	0.20	L =	12	N =	6	ROOT =	3.3756993413442E+01
A =	0.20	L =	12	N =	7	ROOT =	3.7110245184275E+01
A =	0.20	L =	12	N =	8	ROOT =	4.0439037149726E+01
A =	0.20	L =	12	N =	9	ROOT =	4.3727499338406E+01
A =	0.20	L =	12	N =	10	ROOT =	4.6984494520835E+01
A =	0.20	L =	12	N =	11	ROOT =	5.0202048228276E+01
A =	0.20	L =	12	N =	12	ROOT =	5.3365463668873E+01
A =	0.20	L =	12	N =	13	ROOT =	5.6472294619653E+01
A =	0.20	L =	12	N =	14	ROOT =	5.9566828564755E+01
A =	0.20	L =	12	N =	15	ROOT =	6.2729411926460E+01
A =	0.20	L =	12	N =	16	ROOT =	6.6008127669757E+01
A =	0.20	L =	12	N =	17	ROOT =	6.9399175608880E+01
A =	0.20	L =	12	N =	18	ROOT =	7.2878921787525E+01
A =	0.20	L =	12	N =	19	ROOT =	7.6425434803324E+01
A =	0.20	L =	12	N =	20	ROOT =	8.0022817581494E+01
A =	0.20	L =	12	N =	21	ROOT =	8.3660047484341E+01
A =	0.20	L =	12	N =	22	ROOT =	8.7329356787847E+01
A =	0.20	L =	12	N =	23	ROOT =	9.1025091714511E+01
A =	0.20	L =	12	N =	24	ROOT =	9.4742999219265E+01
A =	0.20	L =	12	N =	25	ROOT =	9.8479786044825E+01
A =	0.20	L =	12	N =	26	ROOT =	1.0223284009419E+02
A =	0.20	L =	12	N =	27	ROOT =	1.0600004832533E+02
A =	0.20	L =	12	N =	28	ROOT =	1.0977967355840E+02
A =	0.20	L =	12	N =	29	ROOT =	1.1357026837354E+02
A =	0.20	L =	12	N =	30	ROOT =	1.1737061315389E+02

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ROOTS OF EQUATION 3

A =	0.20	L =	13	N =	1	ROOT =	1.5310807383718E+01
A =	0.20	L =	13	N =	2	ROOT =	2.0406580841227E+01
A =	0.20	L =	13	N =	3	ROOT =	2.4382037522081E+01
A =	0.20	L =	13	N =	4	ROOT =	2.8062136644515E+01
A =	0.20	L =	13	N =	5	ROOT =	3.1593887124517E+01
A =	0.20	L =	13	N =	6	ROOT =	3.5035875699882E+01
A =	0.20	L =	13	N =	7	ROOT =	3.8417901558175E+01
A =	0.20	L =	13	N =	8	ROOT =	4.1757120000505E+01
A =	0.20	L =	13	N =	9	ROOT =	4.5063827376635E+01
A =	0.20	L =	13	N =	10	ROOT =	4.8343123230997E+01
A =	0.20	L =	13	N =	11	ROOT =	5.1594338229568E+01
A =	0.20	L =	13	N =	12	ROOT =	5.4809200654493E+01
A =	0.20	L =	13	N =	13	ROOT =	5.7973473836210E+01
A =	0.20	L =	13	N =	14	ROOT =	6.1083309874840E+01
A =	0.20	L =	13	N =	15	ROOT =	6.4176722761195E+01
A =	0.20	L =	13	N =	16	ROOT =	6.7326862236401E+01
A =	0.20	L =	13	N =	17	ROOT =	7.0589690641261E+01
A =	0.20	L =	13	N =	18	ROOT =	7.3960775845199E+01
A =	0.20	L =	13	N =	19	ROOT =	7.7420763099170E+01
A =	0.20	L =	13	N =	20	ROOT =	8.0948397865503E+01
A =	0.20	L =	13	N =	21	ROOT =	8.4527853141989E+01
A =	0.20	L =	13	N =	22	ROOT =	8.8148044584404E+01
A =	0.20	L =	13	N =	23	ROOT =	9.1801134736871E+01
A =	0.20	L =	13	N =	24	ROOT =	9.5481412836392E+01
A =	0.20	L =	13	N =	25	ROOT =	9.9184597769952E+01
A =	0.20	L =	13	N =	26	ROOT =	1.0290730304181E+02
A =	0.20	L =	13	N =	27	ROOT =	1.0664693518939E+02
A =	0.20	L =	13	N =	28	ROOT =	1.1040133018143E+02
A =	0.20	L =	13	N =	29	ROOT =	1.1416871908255E+02
A =	0.20	L =	13	N =	30	ROOT =	1.1794762446162E+02

ROOTS OF EQUATION 3

A = 0.20	L = 14	N = 1	ROOT =	1.6360673748457E+01
A = 0.20	L = 14	N = 2	ROOT =	2.1537120330218E+01
A = 0.20	L = 14	N = 3	ROOT =	2.5561873316915E+01
A = 0.20	L = 14	N = 4	ROOT =	2.9278730644618E+01
A = 0.20	L = 14	N = 5	ROOT =	3.2839775645169E+01
A = 0.20	L = 14	N = 6	ROOT =	3.6305981694853E+01
A = 0.20	L = 14	N = 7	ROOT =	3.9708540108418E+01
A = 0.20	L = 14	N = 8	ROOT =	4.3065615134056E+01
A = 0.20	L = 14	N = 9	ROOT =	4.6388570384787E+01
A = 0.20	L = 14	N = 10	ROOT =	4.9684462188541E+01
A = 0.20	L = 14	N = 11	ROOT =	5.2956537845190E+01
A = 0.20	L = 14	N = 12	ROOT =	5.6203175476136E+01
A = 0.20	L = 14	N = 13	ROOT =	5.9416871321781E+01
A = 0.20	L = 14	N = 14	ROOT =	6.2581504405759E+01
A = 0.20	L = 14	N = 15	ROOT =	6.5694476258755E+01
A = 0.20	L = 14	N = 16	ROOT =	6.8787457133647E+01
A = 0.20	L = 14	N = 17	ROOT =	7.1930183871826E+01
A = 0.20	L = 14	N = 18	ROOT =	7.5174947098355E+01
A = 0.20	L = 14	N = 19	ROOT =	7.8527332598301E+01
A = 0.20	L = 14	N = 20	ROOT =	8.1968676290999E+01
A = 0.20	L = 14	N = 21	ROOT =	8.5478452663892E+01
A = 0.20	L = 14	N = 22	ROOT =	8.9040917797606E+01
A = 0.20	L = 14	N = 23	ROOT =	9.2644925066732E+01
A = 0.20	L = 14	N = 24	ROOT =	9.6282566160595E+01
A = 0.20	L = 14	N = 25	ROOT =	9.9948074678050E+01
A = 0.20	L = 14	N = 26	ROOT =	1.0363710913716E+02
A = 0.20	L = 14	N = 27	ROOT =	1.0734630292519E+02
A = 0.20	L = 14	N = 28	ROOT =	1.1107297906740E+02
A = 0.20	L = 14	N = 29	ROOT =	1.1481496444736E+02
A = 0.20	L = 14	N = 30	ROOT =	1.1857046480741E+02

ROOTS OF EQUATION 3

A = 0.20	L = 15	N = 1	ROOT =	1.7400033803087E+01
A = 0.20	L = 15	N = 2	ROOT =	2.2662453433694E+01
A = 0.20	L = 15	N = 3	ROOT =	2.6735177305365E+01
A = 0.20	L = 15	N = 4	ROOT =	3.0488001947323E+01
A = 0.20	L = 15	N = 5	ROOT =	3.4077867691305E+01
A = 0.20	L = 15	N = 6	ROOT =	3.7568010307348E+01
A = 0.20	L = 15	N = 7	ROOT =	4.0990925764653E+01
A = 0.20	L = 15	N = 8	ROOT =	4.4365642567145E+01
A = 0.20	L = 15	N = 9	ROOT =	4.7704239444970E+01
A = 0.20	L = 15	N = 10	ROOT =	5.1014697453519E+01
A = 0.20	L = 15	N = 11	ROOT =	5.4302046665512E+01
A = 0.20	L = 15	N = 12	ROOT =	5.7566302221113E+01
A = 0.20	L = 15	N = 13	ROOT =	6.0811256343649E+01
A = 0.20	L = 15	N = 14	ROOT =	6.4022726491512E+01
A = 0.20	L = 15	N = 15	ROOT =	6.7189527766696E+01
A = 0.20	L = 15	N = 16	ROOT =	7.0305720537133E+01
A = 0.20	L = 15	N = 17	ROOT =	7.3398861086291E+01
A = 0.20	L = 15	N = 18	ROOT =	7.6533598120811E+01
A = 0.20	L = 15	N = 19	ROOT =	7.9763433193566E+01
A = 0.20	L = 15	N = 20	ROOT =	8.3098240939964E+01
A = 0.20	L = 15	N = 21	ROOT =	8.6521922729514E+01
A = 0.20	L = 15	N = 22	ROOT =	9.0014742522314E+01
A = 0.20	L = 15	N = 23	ROOT =	9.3561056263974E+01
A = 0.20	L = 15	N = 24	ROOT =	9.7149654464201E+01
A = 0.20	L = 15	N = 25	ROOT =	1.0077255513060E+02
A = 0.20	L = 15	N = 26	ROOT =	1.0442393536792E+02
A = 0.20	L = 15	N = 27	ROOT =	1.0809941273051E+02
A = 0.20	L = 15	N = 28	ROOT =	1.1179558951677E+02
A = 0.20	L = 15	N = 29	ROOT =	1.1550976322471E+02
A = 0.20	L = 15	N = 30	ROOT =	1.1923973817509E+02

ROOTS OF EQUATION 3

A = 0.30	L = 1	N = 1	ROOT = 2.0061911513759E+00
A = 0.30	L = 1	N = 2	ROOT = 5.8159967819125E+00
A = 0.30	L = 1	N = 3	ROOT = 9.7239952209272E+00
A = 0.30	L = 1	N = 4	ROOT = 1.3964672125940E+01
A = 0.30	L = 1	N = 5	ROOT = 1.8326409640403E+01
A = 0.30	L = 1	N = 6	ROOT = 2.2738011370504E+01
A = 0.30	L = 1	N = 7	ROOT = 2.7176601297138E+01
A = 0.30	L = 1	N = 8	ROOT = 3.1628843099099E+01
A = 0.30	L = 1	N = 9	ROOT = 3.6090083725157E+01
A = 0.30	L = 1	N = 10	ROOT = 4.0557302317537E+01
A = 0.30	L = 1	N = 11	ROOT = 4.5028695514001E+01
A = 0.30	L = 1	N = 12	ROOT = 4.9503118866974E+01
A = 0.30	L = 1	N = 13	ROOT = 5.3979811377305E+01
A = 0.30	L = 1	N = 14	ROOT = 5.8458247293087E+01
A = 0.30	L = 1	N = 15	ROOT = 6.2938051707341E+01
A = 0.30	L = 1	N = 16	ROOT = 6.7418950064907E+01
A = 0.30	L = 1	N = 17	ROOT = 7.1900736681714E+01
A = 0.30	L = 1	N = 18	ROOT = 7.6383254416770E+01
A = 0.30	L = 1	N = 19	ROOT = 8.0866381145522E+01
A = 0.30	L = 1	N = 20	ROOT = 8.5350020517717E+01
A = 0.30	L = 1	N = 21	ROOT = 8.9834095496760E+01
A = 0.30	L = 1	N = 22	ROOT = 9.4318543749965E+01
A = 0.30	L = 1	N = 23	ROOT = 9.8803314299254E+01
A = 0.30	L = 1	N = 24	ROOT = 1.0328836504767E+02
A = 0.30	L = 1	N = 25	ROOT = 1.0777366092563E+02
A = 0.30	L = 1	N = 26	ROOT = 1.1225917248294E+02
A = 0.30	L = 1	N = 27	ROOT = 1.1674407480641E+02
A = 0.30	L = 1	N = 28	ROOT = 1.2123074667836E+02
A = 0.30	L = 1	N = 29	ROOT = 1.2571676991500E+02
A = 0.30	L = 1	N = 30	ROOT = 1.3020292884649E+02

ROOTS OF EQUATION 3

A = 0.30	L = 2	N = 1	ROOT = 3.3173341592450E+00
A = 0.30	L = 2	N = 2	ROOT = 7.0650870142883E+00
A = 0.30	L = 2	N = 3	ROOT = 1.0528111810433E+01
A = 0.30	L = 2	N = 4	ROOT = 1.4491340607566E+01
A = 0.30	L = 2	N = 5	ROOT = 1.8712596864539E+01
A = 0.30	L = 2	N = 6	ROOT = 2.3043725621810E+01
A = 0.30	L = 2	N = 7	ROOT = 2.7428750845054E+01
A = 0.30	L = 2	N = 8	ROOT = 3.1843942800546E+01
A = 0.30	L = 2	N = 9	ROOT = 3.6277705149043E+01
A = 0.30	L = 2	N = 10	ROOT = 4.0723715670529E+01
A = 0.30	L = 2	N = 11	ROOT = 4.5178234514216E+01
A = 0.30	L = 2	N = 12	ROOT = 4.9638906527119E+01
A = 0.30	L = 2	N = 13	ROOT = 5.4104173974318E+01
A = 0.30	L = 2	N = 14	ROOT = 5.8572964917997E+01
A = 0.30	L = 2	N = 15	ROOT = 6.3044517290739E+01
A = 0.30	L = 2	N = 16	ROOT = 6.7518274329900E+01
A = 0.30	L = 2	N = 17	ROOT = 7.1993819720500E+01
A = 0.30	L = 2	N = 18	ROOT = 7.6470835886370E+01
A = 0.30	L = 2	N = 19	ROOT = 8.0949076326255E+01
A = 0.30	L = 2	N = 20	ROOT = 8.5428346764771E+01
A = 0.30	L = 2	N = 21	ROOT = 8.9908492004621E+01
A = 0.30	L = 2	N = 22	ROOT = 9.4389386563516E+01
A = 0.30	L = 2	N = 23	ROOT = 9.8870927081903E+01
A = 0.30	L = 2	N = 24	ROOT = 1.0335303131359E+02
A = 0.30	L = 2	N = 25	ROOT = 1.0783562637585E+02
A = 0.30	L = 2	N = 26	ROOT = 1.1231865390417E+02
A = 0.30	L = 2	N = 27	ROOT = 1.1680206386680E+02
A = 0.30	L = 2	N = 28	ROOT = 1.2128581366712E+02
A = 0.30	L = 2	N = 29	ROOT = 1.2576986681126E+02
A = 0.30	L = 2	N = 30	ROOT = 1.3025419185249E+02

ROOTS OF EQUATION 3

A =	0.30	L =	3	N =	1	ROOT =	4.5078705567162E+00
A =	0.30	L =	3	N =	2	ROOT =	8.4479903859438E+00
A =	0.30	L =	3	N =	3	ROOT =	1.1674067926487E+01
A =	0.30	L =	3	N =	4	ROOT =	1.5280712323501E+01
A =	0.30	L =	3	N =	5	ROOT =	1.9291415662027E+01
A =	0.30	L =	3	N =	6	ROOT =	2.3500115786414E+01
A =	0.30	L =	3	N =	7	ROOT =	2.7806059369383E+01
A =	0.30	L =	3	N =	8	ROOT =	3.2165060540762E+01
A =	0.30	L =	3	N =	9	ROOT =	3.6558575470398E+01
A =	0.30	L =	3	N =	10	ROOT =	4.0972904870986E+01
A =	0.30	L =	3	N =	11	ROOT =	4.5402209524073E+01
A =	0.30	L =	3	N =	12	ROOT =	4.9842326494400E+01
A =	0.30	L =	3	N =	13	ROOT =	5.4290509931352E+01
A =	0.30	L =	3	N =	14	ROOT =	5.8744873795238E+01
A =	0.30	L =	3	N =	15	ROOT =	6.3204078944065E+01
A =	0.30	L =	3	N =	16	ROOT =	6.7667147878155E+01
A =	0.30	L =	3	N =	17	ROOT =	7.2133350150265E+01
A =	0.30	L =	3	N =	18	ROOT =	7.6602120822887E+01
A =	0.30	L =	3	N =	19	ROOT =	8.1073051759791E+01
A =	0.30	L =	3	N =	20	ROOT =	8.5545778476036E+01
A =	0.30	L =	3	N =	21	ROOT =	9.0020037034386E+01
A =	0.30	L =	3	N =	22	ROOT =	9.4495607602834E+01
A =	0.30	L =	3	N =	23	ROOT =	9.8972310533090E+01
A =	0.30	L =	3	N =	24	ROOT =	1.0344999757197E+02
A =	0.30	L =	3	N =	25	ROOT =	1.0792854528466E+02
A =	0.30	L =	3	N =	26	ROOT =	1.1240785006601E+02
A =	0.30	L =	3	N =	27	ROOT =	1.1688782430952E+02
A =	0.30	L =	3	N =	28	ROOT =	1.2136839343202E+02
A =	0.30	L =	3	N =	29	ROOT =	1.2584949353895E+02
A =	0.30	L =	3	N =	30	ROOT =	1.3033106957475E+02

ROOTS OF EQUATION 3

A =	0.30	L =	4	N =	1	ROOT =	5.6453140940240E+00
A =	0.30	L =	4	N =	2	ROOT =	9.7841355126874E+00
A =	0.30	L =	4	N =	3	ROOT =	1.3033326561499E+01
A =	0.30	L =	4	N =	4	ROOT =	1.6328700174047E+01
A =	0.30	L =	4	N =	5	ROOT =	2.0065433302591E+01
A =	0.30	L =	4	N =	6	ROOT =	2.4109189604615E+01
A =	0.30	L =	4	N =	7	ROOT =	2.8307985602327E+01
A =	0.30	L =	4	N =	8	ROOT =	3.2593963607615E+01
A =	0.30	L =	4	N =	9	ROOT =	3.6932137731741E+01
A =	0.30	L =	4	N =	10	ROOT =	4.1304414247046E+01
A =	0.30	L =	4	N =	11	ROOT =	4.5700254837797E+01
A =	0.30	L =	4	N =	12	ROOT =	5.0113005481710E+01
A =	0.30	L =	4	N =	13	ROOT =	5.4538582565955E+01
A =	0.30	L =	4	N =	14	ROOT =	5.8973781216303E+01
A =	0.30	L =	4	N =	15	ROOT =	6.3416547038029E+01
A =	0.30	L =	4	N =	16	ROOT =	6.7865439202602E+01
A =	0.30	L =	4	N =	17	ROOT =	7.2319217802114E+01
A =	0.30	L =	4	N =	18	ROOT =	7.6777040132080E+01
A =	0.30	L =	4	N =	19	ROOT =	8.1238228145293E+01
A =	0.30	L =	4	N =	20	ROOT =	8.5702247595910E+01
A =	0.30	L =	4	N =	21	ROOT =	9.0168671770103E+01
A =	0.30	L =	4	N =	22	ROOT =	9.4637155727185E+01
A =	0.30	L =	4	N =	23	ROOT =	9.9107417517715E+01
A =	0.30	L =	4	N =	24	ROOT =	1.0357922447768E+02
A =	0.30	L =	4	N =	25	ROOT =	1.0805230207261E+02
A =	0.30	L =	4	N =	26	ROOT =	1.1252673000061E+02
A =	0.30	L =	4	N =	27	ROOT =	1.1700212058309E+02
A =	0.30	L =	4	N =	28	ROOT =	1.2147846129756E+02
A =	0.30	L =	4	N =	29	ROOT =	1.2595562791509E+02
A =	0.30	L =	4	N =	30	ROOT =	1.3043354199867E+02

ROOTS OF EQUATION 3

```
A =  0.30   L =   5   N =    1      ROOT =  6.7561650814406E+00
A =  0.30   L =   5   N =    2      ROOT =  1.1051167373156E+01
A =  0.30   L =   5   N =    3      ROOT =  1.4439702497069E+01
A =  0.30   L =   5   N =    4      ROOT =  1.7600436479516E+01
A =  0.30   L =   5   N =    5      ROOT =  2.1041658425855E+01
A =  0.30   L =   5   N =    6      ROOT =  2.4870522412631E+01
A =  0.30   L =   5   N =    7      ROOT =  2.0934812517647E+01
A =  0.30   L =   5   N =    8      ROOT =  3.3127846029449E+01
A =  0.30   L =   5   N =    9      ROOT =  3.7397857059916E+01
A =  0.30   L =   5   N =   10      ROOT =  4.1717743484409E+01
A =  0.30   L =   5   N =   11      ROOT =  4.6071942403869E+01
A =  0.30   L =   5   N =   12      ROOT =  5.0450827613695E+01
A =  0.30   L =   5   N =   13      ROOT =  5.4848098156420E+01
A =  0.30   L =   5   N =   14      ROOT =  5.9259444402047E+01
A =  0.30   L =   5   N =   15      ROOT =  6.3681813447550E+01
A =  0.30   L =   5   N =   16      ROOT =  6.8112979547235E+01
A =  0.30   L =   5   N =   17      ROOT =  7.2551200463558E+01
A =  0.30   L =   5   N =   18      ROOT =  7.6995449088717E+01
A =  0.30   L =   5   N =   19      ROOT =  8.1444022607272E+01
A =  0.30   L =   5   N =   20      ROOT =  8.5897665204534E+01
A =  0.30   L =   5   N =   21      ROOT =  9.0354319281274E+01
A =  0.30   L =   5   N =   22      ROOT =  9.4813963879843E+01
A =  0.30   L =   5   N =   23      ROOT =  9.9276190078362E+01
A =  0.30   L =   5   N =   24      ROOT =  1.0374066027793E+02
A =  0.30   L =   5   N =   25      ROOT =  1.0820709333553E+02
A =  0.30   L =   5   N =   26      ROOT =  1.1267525322521E+02
A =  0.30   L =   5   N =   27      ROOT =  1.1714494032936E+02
A =  0.30   L =   5   N =   28      ROOT =  1.2161598467402E+02
A =  0.30   L =   5   N =   29      ROOT =  1.2608824061961E+02
A =  0.30   L =   5   N =   30      ROOT =  1.3056158265409E+02
```

ROOTS OF EQUATION 3

```
A =  0.30   L =   6   N =    1      ROOT =  7.8510190529826E+00
A =  0.30   L =   6   N =    2      ROOT =  1.2273614956189E+01
A =  0.30   L =   6   N =    3      ROOT =  1.5796016967266E+01
A =  0.30   L =   6   N =    4      ROOT =  1.9000020381330E+01
A =  0.30   L =   6   N =    5      ROOT =  2.2214237792577E+01
A =  0.30   L =   6   N =    6      ROOT =  2.5793298750634E+01
A =  0.30   L =   6   N =    7      ROOT =  2.9688634080124E+01
A =  0.30   L =   6   N =    8      ROOT =  3.3767779260010E+01
A =  0.30   L =   6   N =    9      ROOT =  3.7955428606757E+01
A =  0.30   L =   6   N =   10      ROOT =  4.2212451356384E+01
A =  0.30   L =   6   N =   11      ROOT =  4.6516837839566E+01
A =  0.30   L =   6   N =   12      ROOT =  5.0855166783908E+01
A =  0.30   L =   6   N =   13      ROOT =  5.5218725715527E+01
A =  0.30   L =   6   N =   14      ROOT =  5.9601503162331E+01
A =  0.30   L =   6   N =   15      ROOT =  6.3999547976832E+01
A =  0.30   L =   6   N =   16      ROOT =  6.8409568698433E+01
A =  0.30   L =   6   N =   17      ROOT =  7.2829367972674E+01
A =  0.30   L =   6   N =   18      ROOT =  7.7257210300037E+01
A =  0.30   L =   6   N =   19      ROOT =  8.1691749192616E+01
A =  0.30   L =   6   N =   20      ROOT =  8.6131923565402E+01
A =  0.30   L =   6   N =   21      ROOT =  9.0576885702526E+01
A =  0.30   L =   6   N =   22      ROOT =  9.5025950064981E+01
A =  0.30   L =   6   N =   23      ROOT =  9.9478556202680E+01
A =  0.30   L =   6   N =   24      ROOT =  1.0393424142190E+02
A =  0.30   L =   6   N =   25      ROOT =  1.0839262033335E+02
A =  0.30   L =   6   N =   26      ROOT =  1.1285336933886E+02
A =  0.30   L =   6   N =   27      ROOT =  1.1731621470793E+02
A =  0.30   L =   6   N =   28      ROOT =  1.2178092332490E+02
A =  0.30   L =   6   N =   29      ROOT =  1.2624729541815E+02
A =  0.30   L =   6   N =   30      ROOT =  1.3071515880095E+02
```

ROOTS OF EQUATION 3

```
A =  0.30   L =   7   N =    1     ROOT =  8.9348274100939E+00
A =  0.30   L =   7   N =    2     ROOT =  1.3470439265232E+01
A =  0.30   L =   7   N =    3     ROOT =  1.7091970900037E+01
A =  0.30   L =   7   N =    4     ROOT =  2.0410963758607E+01
A =  0.30   L =   7   N =    5     ROOT =  2.3552111828342E+01
A =  0.30   L =   7   N =    6     ROOT =  2.6884066761862E+01
A =  0.30   L =   7   N =    7     ROOT =  3.0574519689203E+01
A =  0.30   L =   7   N =    8     ROOT =  3.4515377901681E+01
A =  0.30   L =   7   N =    9     ROOT =  3.8605086339429E+01
A =  0.30   L =   7   N =   10     ROOT =  4.2783305250999E+01
A =  0.30   L =   7   N =   11     ROOT =  4.7034578641250E+01
A =  0.30   L =   7   N =   12     ROOT =  5.1325730673728E+01
A =  0.30   L =   7   N =   13     ROOT =  5.5658123359248E+01
A =  0.30   L =   7   N =   14     ROOT =  5.9999896527532E+01
A =  0.30   L =   7   N =   15     ROOT =  6.4369521305163E+01
A =  0.30   L =   7   N =   16     ROOT =  6.8754982448971E+01
A =  0.30   L =   7   N =   17     ROOT =  7.3153287460197E+01
A =  0.30   L =   7   N =   18     ROOT =  7.7562157482135E+01
A =  0.30   L =   7   N =   19     ROOT =  8.1979825036266E+01
A =  0.30   L =   7   N =   20     ROOT =  8.6404897411318E+01
A =  0.30   L =   7   N =   21     ROOT =  9.0836261904078E+01
A =  0.30   L =   7   N =   22     ROOT =  9.5273010579536E+01
A =  0.30   L =   7   N =   23     ROOT =  9.9714431589231E+01
A =  0.30   L =   7   N =   24     ROOT =  1.0415989332762E+02
A =  0.30   L =   7   N =   25     ROOT =  1.0860889760831E+02
A =  0.30   L =   7   N =   26     ROOT =  1.1306101932071E+02
A =  0.30   L =   7   N =   27     ROOT =  1.1751589880324E+02
A =  0.30   L =   7   N =   28     ROOT =  1.2197322970226E+02
A =  0.30   L =   7   N =   29     ROOT =  1.2643274944042E+02
A =  0.30   L =   7   N =   30     ROOT =  1.3089423166182E+02
```

ROOTS OF EQUATION 3

```
A =  0.30   L =   8   N =    1     ROOT =  1.0010368550777E+01
A =  0.30   L =   8   N =    2     ROOT =  1.4650844110941E+01
A =  0.30   L =   8   N =    3     ROOT =  1.8347556407974E+01
A =  0.30   L =   8   N =    4     ROOT =  2.1771198927175E+01
A =  0.30   L =   8   N =    5     ROOT =  2.4969469867547E+01
A =  0.30   L =   8   N =    6     ROOT =  2.8138438617700E+01
A =  0.30   L =   8   N =    7     ROOT =  3.1600718333560E+01
A =  0.30   L =   8   N =    8     ROOT =  3.5374490060505E+01
A =  0.30   L =   8   N =    9     ROOT =  3.9340859035969E+01
A =  0.30   L =   8   N =   10     ROOT =  4.3445490157944E+01
A =  0.30   L =   8   N =   11     ROOT =  4.7624903626743E+01
A =  0.30   L =   8   N =   12     ROOT =  5.1862220287236E+01
A =  0.30   L =   8   N =   13     ROOT =  5.6141973000886E+01
A =  0.30   L =   8   N =   14     ROOT =  6.0454084172399E+01
A =  0.30   L =   8   N =   15     ROOT =  6.4791462863403E+01
A =  0.30   L =   8   N =   16     ROOT =  6.9148981946289E+01
A =  0.30   L =   8   N =   17     ROOT =  7.3522829857033E+01
A =  0.30   L =   8   N =   18     ROOT =  7.7910180115860E+01
A =  0.30   L =   8   N =   19     ROOT =  8.2308570385696E+01  *
A =  0.30   L =   8   N =   20     ROOT =  8.6716447292485E+01
A =  0.30   L =   8   N =   21     ROOT =  9.1132325393410E+01
A =  0.30   L =   8   N =   22     ROOT =  9.5555061509520E+01
A =  0.30   L =   8   N =   23     ROOT =  9.9983720819609E+01
A =  0.30   L =   8   N =   24     ROOT =  1.0441753131017E+02
A =  0.30   L =   8   N =   25     ROOT =  1.0885584972249E+02
A =  0.30   L =   8   N =   26     ROOT =  1.1329813573155E+02
A =  0.30   L =   8   N =   27     ROOT =  1.1774393211570E+02
A =  0.30   L =   8   N =   28     ROOT =  1.2219284935105E+02
A =  0.30   L =   8   N =   29     ROOT =  1.2664455351552E+02
A =  0.30   L =   8   N =   30     ROOT =  1.3109875670200E+02
```

ROOTS OF EQUATION 3

A =	0.30	L =	9	N =	1	ROOT =	1.1079417976700E+01
A =	0.30	L =	9	N =	2	ROOT =	1.5819109990557E+01
A =	0.30	L =	9	N =	3	ROOT =	1.9579090446532E+01
A =	0.30	L =	9	N =	4	ROOT =	2.3078572678460E+01
A =	0.30	L =	9	N =	5	ROOT =	2.6377406510172E+01
A =	0.30	L =	9	N =	6	ROOT =	2.9516069891560E+01
A =	0.30	L =	9	N =	7	ROOT =	3.2774024612069E+01
A =	0.30	L =	9	N =	8	ROOT =	3.6351981899753E+01
A =	0.30	L =	9	N =	9	ROOT =	4.0187217218114E+01
A =	0.30	L =	9	N =	10	ROOT =	4.4184967062029E+01
A =	0.30	L =	9	N =	11	ROOT =	4.8288208862198E+01
A =	0.30	L =	9	N =	12	ROOT =	5.2464491521000E+01
A =	0.30	L =	9	N =	13	ROOT =	5.6694026249665E+01
A =	0.30	L =	9	N =	14	ROOT =	6.0963873970657E+01
A =	0.30	L =	9	N =	15	ROOT =	6.5265109496922E+01
A =	0.30	L =	9	N =	16	ROOT =	6.9591325264133E+01
A =	0.30	L =	9	N =	17	ROOT =	7.3937777848683E+01
A =	0.30	L =	9	N =	18	ROOT =	7.8300869084012E+01
A =	0.30	L =	9	N =	19	ROOT =	8.2677814392233E+01
A =	0.30	L =	9	N =	20	ROOT =	8.7066422222040E+01
A =	0.30	L =	9	N =	21	ROOT =	9.1469426211115E+01
A =	0.30	L =	9	N =	22	ROOT =	9.5871960584529E+01
A =	0.30	L =	9	N =	23	ROOT =	1.0028631874297E+02
A =	0.30	L =	9	N =	24	ROOT =	1.0470706167692E+02
A =	0.30	L =	9	N =	25	ROOT =	1.0913339293976E+02
A =	0.30	L =	9	N =	26	ROOT =	1.1356464350159E+02
A =	0.30	L =	9	N =	27	ROOT =	1.1800024713914E+02
A =	0.30	L =	9	N =	28	ROOT =	1.2243972130369E+02
A =	0.30	L =	9	N =	29	ROOT =	1.2688265256528E+02
A =	0.30	L =	9	N =	30	ROOT =	1.3132868395786E+02

ROOTS OF EQUATION 3

A =	0.30	L =	10	N =	1	ROOT =	1.2143204024218E+01
A =	0.30	L =	10	N =	2	ROOT =	1.6977524320300E+01
A =	0.30	L =	10	N =	3	ROOT =	2.0795121484564E+01
A =	0.30	L =	10	N =	4	ROOT =	2.4350362309128E+01
A =	0.30	L =	10	N =	5	ROOT =	2.7735738949670E+01
A =	0.30	L =	10	N =	6	ROOT =	3.0939931345901E+01
A =	0.30	L =	10	N =	7	ROOT =	3.4084357763134E+01
A =	0.30	L =	10	N =	8	ROOT =	3.7456775349140E+01
A =	0.30	L =	10	N =	9	ROOT =	4.1127841606617E+01
A =	0.30	L =	10	N =	10	ROOT =	4.5008855987752E+01
A =	0.30	L =	10	N =	11	ROOT =	4.9024974440505E+01
A =	0.30	L =	10	N =	12	ROOT =	5.3132669526660E+01
A =	0.30	L =	10	N =	13	ROOT =	5.7306166250368E+01
A =	0.30	L =	10	N =	14	ROOT =	6.1529057842973E+01
A =	0.30	L =	10	N =	15	ROOT =	6.5790227552447E+01
A =	0.30	L =	10	N =	16	ROOT =	7.0081781720929E+01
A =	0.30	L =	10	N =	17	ROOT =	7.4397915553537E+01
A =	0.30	L =	10	N =	18	ROOT =	7.8734243442447E+01
A =	0.30	L =	10	N =	19	ROOT =	8.3087379647168E+01
A =	0.30	L =	10	N =	20	ROOT =	8.7454663350772E+01
A =	0.30	L =	10	N =	21	ROOT =	9.1833971694474E+01
A =	0.30	L =	10	N =	22	ROOT =	9.6223588850246E+01
A =	0.30	L =	10	N =	23	ROOT =	1.0062211208849E+02
A =	0.30	L =	10	N =	24	ROOT =	1.0502838299850E+02
A =	0.30	L =	10	N =	25	ROOT =	1.0944143623673E+02
A =	0.30	L =	10	N =	26	ROOT =	1.1386048874884E+02
A =	0.30	L =	10	N =	27	ROOT =	1.1828477002576E+02
A =	0.30	L =	10	N =	28	ROOT =	1.2271377902682E+02
A =	0.30	L =	10	N =	29	ROOT =	1.2714698605690E+02
A =	0.30	L =	10	N =	30	ROOT =	1.3158395841429E+02

ROOTS OF EQUATION 3

							ROOT	
A =	0.30	L =	11	N =	1	ROOT =	1.320262038744E+01
A =	0.30	L =	11	N =	2	ROOT =	1.812755804105IE+01
A =	0.30	L =	11	N =	3	ROOT =	2.199971080405IE+01
A =	0.30	L =	11	N =	4	ROOT =	2.5600418982068E+01
A =	0.30	L =	11	N =	5	ROOT =	2.9047649724677E+01
A =	0.30	L =	11	N =	6	ROOT =	3.2341394205572E+01
A =	0.30	L =	11	N =	7	ROOT =	3.5486282870678E+01
A =	0.30	L =	11	N =	8	ROOT =	3.8692917957635E+01
A =	0.30	L =	11	N =	9	ROOT =	4.2177910093209E+01
A =	0.30	L =	11	N =	10	ROOT =	4.5921136227450E+01
A =	0.30	L =	11	N =	11	ROOT =	4.9836896524038E+01
A =	0.30	L =	11	N =	12	ROOT =	5.3867313383947E+01
A =	0.30	L =	11	N =	13	ROOT =	5.7978493166199E+01
A =	0.30	L =	11	N =	14	ROOT =	6.214953937330IE+01
A =	0.30	L =	11	N =	15	ROOT =	6.6366641227264E+01
A =	0.30	L =	11	N =	16	ROOT =	7.0620149754124E+01
A =	0.30	L =	11	N =	17	ROOT =	7.4903040344662E+01
A =	0.30	L =	11	N =	18	ROOT =	7.921403855249IE+01
A =	0.30	L =	11	N =	19	ROOT =	8.3537007960657E+01
A =	0.30	L =	11	N =	20	ROOT =	8.7881008185897E+01
A =	0.30	L =	11	N =	21	ROOT =	9.2239265523925E+01
A =	0.30	L =	11	N =	22	ROOT =	9.6609813866931E+01
A =	0.30	L =	11	N =	23	ROOT =	1.0099090913279E+02
A =	0.30	L =	11	N =	24	ROOT =	1.0538138756673E+02
A =	0.30	L =	11	N =	25	ROOT =	1.0977988246296E+02
A =	0.30	L =	11	N =	26	ROOT =	1.1418549707091E+02
A =	0.30	L =	11	N =	27	ROOT =	1.1859742134480E+02
H =	0.30	L =	11	N =	28	ROOT =	1.2301495024278E+02
A =	0.30	L =	11	N =	29	ROOT =	1.2743748851669E+02
A =	0.30	L =	11	N =	30	ROOT =	1.3186452043260E+02

ROOTS OF EQUATION 3

							ROOT	
A =	0.30	L =	12	N =	1	ROOT =	1.4258340010864E+01
A =	0.30	L =	12	N =	2	ROOT =	1.9270292344375E+01
A =	0.30	L =	12	N =	3	ROOT =	2.3194928290438E+01
A =	0.30	L =	12	N =	4	ROOT =	2.6836313811787E+01
A =	0.30	L =	12	N =	5	ROOT =	3.0328403186081E+01
A =	0.30	L =	12	N =	6	ROOT =	3.3695507466013E+01
A =	0.30	L =	12	N =	7	ROOT =	3.6910005468633E+01
A =	0.30	L =	12	N =	8	ROOT =	4.0043496083823E+01
A =	0.30	L =	12	N =	9	ROOT =	4.3345834173429E+01
A =	0.30	L =	12	N =	10	ROOT =	4.6920197656012E+01
A =	0.30	L =	12	N =	11	ROOT =	5.0726956707601E+01
A =	0.30	L =	12	N =	12	ROOT =	5.4669656093322E+01
A =	0.30	L =	12	N =	13	ROOT =	5.8711445509774E+01
A =	0.30	L =	12	N =	14	ROOT =	6.2825398749141E+01
A =	0.30	L =	12	N =	15	ROOT =	6.6994269752847E+01
A =	0.30	L =	12	N =	16	ROOT =	7.1206279598691E+01
A =	0.30	L =	12	N =	17	ROOT =	7.5452974449429E+01
A =	0.30	L =	12	N =	18	ROOT =	7.9728075911995E+01
A =	0.30	L =	12	N =	19	ROOT =	8.4026767231902E+01
A =	0.30	L =	12	N =	20	ROOT =	8.8345295541552E+01
A =	0.30	L =	12	N =	21	ROOT =	9.2680675483294E+01
A =	0.30	L =	12	N =	22	ROOT =	9.7030496673218E+01
A =	0.30	L =	12	N =	23	ROOT =	1.0139280277089E+02
A =	0.30	L =	12	N =	24	ROOT =	1.0576596305575E+02
A =	0.30	L =	12	N =	25	ROOT =	1.1014862965604E+02
A =	0.30	L =	12	N =	26	ROOT =	1.1453966779298E+02
A =	0.30	L =	12	N =	27	ROOT =	1.1893811693712E+02
A =	0.30	L =	12	N =	28	ROOT =	1.2334315842901E+02
A =	0.30	L =	12	N =	29	ROOT =	1.2775409810734E+02
A =	0.30	L =	12	N =	30	ROOT =	1.3217030623067E+02

ROOTS OF EQUATION 3

A =	0.30	L =	13	N =	1	ROOT =	1.5310887383256E+01
A =	0.30	L =	13	N =	2	ROOT =	2.0406580526556E+01
A =	0.30	L =	13	N =	3	ROOT =	2.4382019256257E+01
A =	0.30	L =	13	N =	4	ROOT =	2.8061755216987E+01
A =	0.30	L =	13	N =	5	ROOT =	3.1509765318006E+01
A =	0.30	L =	13	N =	6	ROOT =	3.5008806856257E+01
A =	0.30	L =	13	N =	7	ROOT =	3.8303403253926E+01
A =	0.30	L =	13	N =	8	ROOT =	4.1459352281971E+01
A =	0.30	L =	13	N =	9	ROOT =	4.4631406496355E+01
A =	0.30	L =	13	N =	10	ROOT =	4.8038506267307E+01
A =	0.30	L =	13	N =	11	ROOT =	5.1700071998780E+01
A =	0.30	L =	13	N =	12	ROOT =	5.5541952518471E+01
A =	0.30	L =	13	N =	13	ROOT =	5.9505976633741E+01
A =	0.30	L =	13	N =	14	ROOT =	6.3556983817645E+01
A =	0.30	L =	13	N =	15	ROOT =	6.7673177468055E+01
A =	0.30	L =	13	N =	16	ROOT =	7.1840102698363E+01
A =	0.30	L =	13	N =	17	ROOT =	7.6047590287030E+01
A =	0.30	L =	13	N =	18	ROOT =	8.0288203185441E+01
A =	0.30	L =	13	N =	19	ROOT =	8.4556259682958E+01
A =	0.30	L =	13	N =	20	ROOT =	8.8847371375209E+01
A =	0.30	L =	13	N =	21	ROOT =	9.3158055668683E+01
A =	0.30	L =	13	N =	22	ROOT =	9.7485510370046E+01
A =	0.30	L =	13	N =	23	ROOT =	1.0182745105551E+02
A =	0.30	L =	13	N =	24	ROOT =	1.0618199440818E+02
A =	0.30	L =	13	N =	25	ROOT =	1.1054757253203E+02
A =	0.30	L =	13	N =	26	ROOT =	1.1492286877669E+02
A =	0.30	L =	13	N =	27	ROOT =	1.1930676887376E+02
A =	0.30	L =	13	N =	28	ROOT =	1.2369832320203E+02
A =	0.30	L =	13	N =	29	ROOT =	1.2809671727183E+02
A =	0.30	L =	13	N =	30	ROOT =	1.3250124841750E+02

ROOTS OF EQUATION 3

A =	0.30	L =	14	N =	1	ROOT =	1.6360673748374E+01
A =	0.30	L =	14	N =	2	ROOT =	2.1537120260593E+01
A =	0.30	L =	14	N =	3	ROOT =	2.5561868542041E+01
A =	0.30	L =	14	N =	4	ROOT =	2.9278614361877E+01
A =	0.30	L =	14	N =	5	ROOT =	3.2838318200012E+01
A =	0.30	L =	14	N =	6	ROOT =	3.6294857128841E+01
A =	0.30	L =	14	N =	7	ROOT =	3.9652449660243E+01
A =	0.30	L =	14	N =	8	ROOT =	4.2878011907293E+01
A =	0.30	L =	14	N =	9	ROOT =	4.6010782180808E+01
A =	0.30	L =	14	N =	10	ROOT =	4.9258797637772E+01
A =	0.30	L =	14	N =	11	ROOT =	5.2763423506170E+01
A =	0.30	L =	14	N =	12	ROOT =	5.6487946297672E+01
A =	0.30	L =	14	N =	13	ROOT =	6.0363810374258E+01
A =	0.30	L =	14	N =	14	ROOT =	6.4345040020879E+01
A =	0.30	L =	14	N =	15	ROOT =	6.8403643129164E+01
A =	0.30	L =	14	N =	16	ROOT =	7.2521670037244E+01
A =	0.30	L =	14	N =	17	ROOT =	7.6686844002515E+01
A =	0.30	L =	14	N =	18	ROOT =	8.0890309177673E+01
A =	0.30	L =	14	N =	19	ROOT =	8.5125431853496E+01
A =	0.30	L =	14	N =	20	ROOT =	8.9387035731001E+01
A =	0.30	L =	14	N =	21	ROOT =	9.3671267884419E+01
A =	0.30	L =	14	N =	22	ROOT =	9.7974713720916E+01
A =	0.30	L =	14	N =	23	ROOT =	1.0229480186685E+02
A =	0.30	L =	14	N =	24	ROOT =	1.0662936597584E+02
A =	0.30	L =	14	N =	25	ROOT =	1.1097660415371E+02
A =	0.30	L =	14	N =	26	ROOT =	1.1533504125508E+02
A =	0.30	L =	14	N =	27	ROOT =	1.1970328652677E+02
A =	0.30	L =	14	N =	28	ROOT =	1.2400036125805E+02
A =	0.30	L =	14	N =	29	ROOT =	1.2846529344820E+02
A =	0.30	L =	14	N =	30	ROOT =	1.3285727650517E+02

ROOTS OF EQUATION 3

A = 0.30	L = 15	N = 1	ROOT =	1.7400033003072E+01
A = 0.30	L = 15	N = 2	ROOT =	2.2662493418541E+01
A = 0.30	L = 15	N = 3	ROOT =	2.6735176088221E+01
A = 0.30	L = 15	N = 4	ROOT =	3.0407967669560E+01
A = 0.30	L = 15	N = 5	ROOT =	3.4077373715303E+01
A = 0.30	L = 15	N = 6	ROOT =	3.7563680484141E+01
A = 0.30	L = 15	N = 7	ROOT =	4.0965607287420E+01
A = 0.30	L = 15	N = 8	ROOT =	4.4263560344026E+01
A = 0.30	L = 15	N = 9	ROOT =	4.7433173275724E+01
A = 0.30	L = 15	N = 10	ROOT =	5.0583605639036E+01
A = 0.30	L = 15	N = 11	ROOT =	5.3925300861371E+01
A = 0.30	L = 15	N = 12	ROOT =	5.7513348251025E+01
A = 0.30	L = 15	N = 13	ROOT =	6.1287902046932E+01
A = 0.30	L = 15	N = 14	ROOT =	6.5190904423736E+01
A = 0.30	L = 15	N = 15	ROOT =	6.9186258270025E+01
A = 0.30	L = 15	N = 16	ROOT =	7.3251209622817E+01
A = 0.30	L = 15	N = 17	ROOT =	7.7370756424210E+01
A = 0.30	L = 15	N = 18	ROOT =	8.1534342865106E+01
A = 0.30	L = 15	N = 19	ROOT =	8.5734186930526E+01
A = 0.30	L = 15	N = 20	ROOT =	8.9964351107425E+01
A = 0.30	L = 15	N = 21	ROOT =	9.4220187536204E+01
A = 0.30	L = 15	N = 22	ROOT =	9.8497985434472E+01
A = 0.30	L = 15	N = 23	ROOT =	1.0279473516211E+02
A = 0.30	L = 15	N = 24	ROOT =	1.0710796399553E+02
A = 0.30	L = 15	N = 25	ROOT =	1.1143561783046E+02
A = 0.30	L = 15	N = 26	ROOT =	1.1575597449103E+02
A = 0.30	L = 15	N = 27	ROOT =	1.2012757776343E+02
A = 0.30	L = 15	N = 28	ROOT =	1.2448918736216E+02
A = 0.30	L = 15	N = 29	ROOT =	1.2885973986059E+02
A = 0.30	L = 15	N = 30	ROOT =	1.3323031796203E+02

ROOTS OF EQUATION 3

A = 0.40	L = 1	N = 1	ROOT =	1.9304438265042E+00
A = 0.40	L = 1	N = 2	ROOT =	6.1538943312312E+00
A = 0.40	L = 1	N = 3	ROOT =	1.0951527924713E+01
A = 0.40	L = 1	N = 4	ROOT =	1.6022567552670E+01
A = 0.40	L = 1	N = 5	ROOT =	2.1183342929203E+01
A = 0.40	L = 1	N = 6	ROOT =	2.6371290542716E+01
A = 0.40	L = 1	N = 7	ROOT =	3.1575302244827E+01
A = 0.40	L = 1	N = 8	ROOT =	3.6788478732111E+01
A = 0.40	L = 1	N = 9	ROOT =	4.2007365250367E+01
A = 0.40	L = 1	N = 10	ROOT =	4.7230061960746E+01
A = 0.40	L = 1	N = 11	ROOT =	5.2455421112206E+01
A = 0.40	L = 1	N = 12	ROOT =	5.7682715324858E+01
A = 0.40	L = 1	N = 13	ROOT =	6.2911468110399E+01
A = 0.40	L = 1	N = 14	ROOT =	6.8141320208171E+01
A = 0.40	L = 1	N = 15	ROOT =	7.3372056575948E+01
A = 0.40	L = 1	N = 16	ROOT =	7.8603493578235E+01
A = 0.40	L = 1	N = 17	ROOT =	8.3835499796119E+01
A = 0.40	L = 1	N = 18	ROOT =	8.9067974701647E+01
A = 0.40	L = 1	N = 19	ROOT =	9.4300840125870E+01
A = 0.40	L = 1	N = 20	ROOT =	9.9534034369370E+01
A = 0.40	L = 1	N = 21	ROOT =	1.0476750808138E+02
A = 0.40	L = 1	N = 22	ROOT =	1.1000122131733E+02
A = 0.40	L = 1	N = 23	ROOT =	1.1523514139960E+02
A = 0.40	L = 1	N = 24	ROOT =	1.2046924133667E+02
A = 0.40	L = 1	N = 25	ROOT =	1.2570349863787E+02
A = 0.40	L = 1	N = 26	ROOT =	1.3093789441266E+02
A = 0.40	L = 1	N = 27	ROOT =	1.3617241267796E+02
A = 0.40	L = 1	N = 28	ROOT =	1.4140703981948E+02
A = 0.40	L = 1	N = 29	ROOT =	1.4664176416856E+02
A = 0.40	L = 1	N = 30	ROOT =	1.5187655766654E+02

ROOTS OF EQUATION 3

					ROOT	
A =	0.40	L =	2	N = 1	ROOT =	3.2576296811901E+00
A =	0.40	L =	2	N = 2	ROOT =	7.0827717204361E+00
A =	0.40	L =	2	N = 3	ROOT =	1.1440067560733E+01
A =	0.40	L =	2	N = 4	ROOT =	1.6353050359107E+01
A =	0.40	L =	2	N = 5	ROOT =	2.1425272958263E+01
A =	0.40	L =	2	N = 6	ROOT =	2.6563944826967E+01
A =	0.40	L =	2	N = 7	ROOT =	3.1735430086464E+01
A =	0.40	L =	2	N = 8	ROOT =	3.6925509771552E+01
A =	0.40	L =	2	N = 9	ROOT =	4.2127145173403E+01
A =	0.40	L =	2	N = 10	ROOT =	4.7336456314063E+01
A =	0.40	L =	2	N = 11	ROOT =	5.2551126503363E+01
A =	0.40	L =	2	N = 12	ROOT =	5.7769686840684E+01
A =	0.40	L =	2	N = 13	ROOT =	6.2991160687054E+01
A =	0.40	L =	2	N = 14	ROOT =	6.8214873286189E+01
A =	0.40	L =	2	N = 15	ROOT =	7.3440343424771E+01
A =	0.40	L =	2	N = 16	ROOT =	7.8667210654002E+01
A =	0.40	L =	2	N = 17	ROOT =	8.3895274903884E+01
A =	0.40	L =	2	N = 18	ROOT =	8.9124190398769E+01
A =	0.40	L =	2	N = 19	ROOT =	9.4353928310210E+01
A =	0.40	L =	2	N = 20	ROOT =	9.9584324895131E+01
A =	0.40	L =	2	N = 21	ROOT =	1.0481528120593E+02
A =	0.40	L =	2	N = 22	ROOT =	1.1004671717442E+02
A =	0.40	L =	2	N = 23	ROOT =	1.1527856731294E+02
A =	0.40	L =	2	N = 24	ROOT =	1.2051077753911E+02
A =	0.40	L =	2	N = 25	ROOT =	1.2574330279601E+02
A =	0.40	L =	2	N = 26	ROOT =	1.3097610852444E+02
A =	0.40	L =	2	N = 27	ROOT =	1.3620915287310E+02
A =	0.40	L =	2	N = 28	ROOT =	1.4144241841781E+02
A =	0.40	L =	2	N = 29	ROOT =	1.4667587851305E+02
A =	0.40	L =	2	N = 30	ROOT =	1.5190951301895E+02

ROOTS OF EQUATION 3

					ROOT	
A =	0.40	L =	3	N = 1	ROOT =	4.4771917181613E+00
A =	0.40	L =	3	N = 2	ROOT =	8.2731486439169E+00
A =	0.40	L =	3	N = 3	ROOT =	1.2175133826378E+01
A =	0.40	L =	3	N = 4	ROOT =	1.6835631947098E+01
A =	0.40	L =	3	N = 5	ROOT =	2.1785393302936E+01
A =	0.40	L =	3	N = 6	ROOT =	2.6851377800793E+01
A =	0.40	L =	3	N = 7	ROOT =	3.1974682147077E+01
A =	0.40	L =	3	N = 8	ROOT =	3.7130450000041E+01
A =	0.40	L =	3	N = 9	ROOT =	4.2306397144361E+01
A =	0.40	L =	3	N = 10	ROOT =	4.7495750249384E+01
A =	0.40	L =	3	N = 11	ROOT =	5.2694465484784E+01
A =	0.40	L =	3	N = 12	ROOT =	5.7899978285277E+01
A =	0.40	L =	3	N = 13	ROOT =	6.3110503107981E+01
A =	0.40	L =	3	N = 14	ROOT =	6.8325101316589E+01
A =	0.40	L =	3	N = 15	ROOT =	7.3542692177208E+01
A =	0.40	L =	3	N = 16	ROOT =	7.8762739805329E+01
A =	0.40	L =	3	N = 17	ROOT =	8.3984782675592E+01
A =	0.40	L =	3	N = 18	ROOT =	8.9208460095775E+01
A =	0.40	L =	3	N = 19	ROOT =	9.4433521901594E+01
A =	0.40	L =	3	N = 20	ROOT =	9.9659727746053E+01
A =	0.40	L =	3	N = 21	ROOT =	1.0486912622112E+02
A =	0.40	L =	3	N = 22	ROOT =	1.1011493651389E+02
A =	0.40	L =	3	N = 23	ROOT =	1.1534368490295E+02
A =	0.40	L =	3	N = 24	ROOT =	1.2057306320559E+02
A =	0.40	L =	3	N = 25	ROOT =	1.2580299261926E+02
A =	0.40	L =	3	N = 26	ROOT =	1.3103340696177E+02
A =	0.40	L =	3	N = 27	ROOT =	1.3626425024172E+02
A =	0.40	L =	3	N = 28	ROOT =	1.4149547476942E+02
A =	0.40	L =	3	N = 29	ROOT =	1.4672703967309E+02
A =	0.40	L =	3	N = 30	ROOT =	1.5195890972232E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.40	L = 4	N = 1	ROOT =	5.632493690008l E+00
A = 0.40	L = 4	N = 2	ROOT =	9.5795935616079E+00
A = 0.40	L = 4	N = 3	ROOT =	1.3114007296849E+01
A = 0.40	L = 4	N = 4	ROOT =	1.7470203198729E+01
A = 0.40	L = 4	N = 5	ROOT =	2.2260057912334E+01
A = 0.40	L = 4	N = 6	ROOT =	2.7231890559266E+01
A = 0.40	L = 4	N = 7	ROOT =	3.2291988638333E+01
A = 0.40	L = 4	N = 8	ROOT =	3.7402590637294E+01
A = 0.40	L = 4	N = 9	ROOT =	4.2544633954493E+01
A = 0.40	L = 4	N = 10	ROOT =	4.7707594469741E+01
A = 0.40	L = 4	N = 11	ROOT =	5.2885179694856E+01
A = 0.40	L = 4	N = 12	ROOT =	5.8073393473165E+01
A = 0.40	L = 4	N = 13	ROOT =	6.3269575041276E+01
A = 0.40	L = 4	N = 14	ROOT =	6.8471883822833E+01
A = 0.40	L = 4	N = 15	ROOT =	7.3679005835309E+01
A = 0.40	L = 4	N = 16	ROOT =	7.8889977856157E+01
A = 0.40	L = 4	N = 17	ROOT =	8.4104077664588E+01
A = 0.40	L = 4	N = 18	ROOT =	8.9320753084549E+01
A = 0.40	L = 4	N = 19	ROOT =	9.4539574710514E+01
A = 0.40	L = 4	N = 20	ROOT =	9.9760203577429E+01
A = 0.40	L = 4	N = 21	ROOT =	1.0498236853788E+02
A = 0.40	L = 4	N = 22	ROOT =	1.1020585810743E+02
A = 0.40	L = 4	N = 23	ROOT =	1.1543046871840E+02
A = 0.40	L = 4	N = 24	ROOT =	1.2065607603935E+02
A = 0.40	L = 4	N = 25	ROOT =	1.2588254846561E+02
A = 0.40	L = 4	N = 26	ROOT =	1.3110978217270E+02
A = 0.40	L = 4	N = 27	ROOT =	1.3633768931156E+02
A = 0.40	L = 4	N = 28	ROOT =	1.4156619504961E+02
A = 0.40	L = 4	N = 29	ROOT =	1.4679523524591E+02
A = 0.40	L = 4	N = 30	ROOT =	1.5202475460755E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.40	L = 5	N = 1	ROOT =	6.7513623616615E+00
A = 0.40	L = 5	N = 2	ROOT =	1.0900252906400E+01
A = 0.40	L = 5	N = 3	ROOT =	1.4235090069731E+01
A = 0.30	L = 5	N = 4	ROOT =	1.8252177966978E+01
A = 0.40	L = 5	N = 5	ROOT =	2.2848639048076E+01
A = 0.40	L = 5	N = 6	ROOT =	2.7703477879965E+01
A = 0.40	L = 5	N = 7	ROOT =	3.2686029984192E+01
A = 0.40	L = 5	N = 8	ROOT =	3.7741037811916E+01
A = 0.40	L = 5	N = 9	ROOT =	4.2841229512325E+01
A = 0.40	L = 5	N = 10	ROOT =	4.7971536130903E+01
A = 0.40	L = 5	N = 11	ROOT =	5.3122932185052E+01
A = 0.40	L = 5	N = 12	ROOT =	5.8289675465986E+01
A = 0.40	L = 5	N = 13	ROOT =	6.3467936368428E+01
A = 0.40	L = 5	N = 14	ROOT =	6.8655062055003E+01
A = 0.40	L = 5	N = 15	ROOT =	7.3849156438514E+01
A = 0.40	L = 5	N = 16	ROOT =	7.9048828209709E+01
A = 0.40	L = 5	N = 17	ROOT =	8.4253033307374E+01
A = 0.40	L = 5	N = 18	ROOT =	8.9460972035834E+01
A = 0.40	L = 5	N = 19	ROOT =	9.4672025537166E+01
A = 0.40	L = 5	N = 20	ROOT =	9.9085700218319E+01
A = 0.40	L = 5	N = 21	ROOT =	1.0510160413149E+02
A = 0.40	L = 5	N = 22	ROOT =	1.1031941916193E+02
A = 0.40	L = 5	N = 23	ROOT =	1.1553088496523E+02
A = 0.40	L = 5	N = 24	ROOT =	1.2075978642405E+02
A = 0.40	L = 5	N = 25	ROOT =	1.2598194423678E+02
A = 0.40	L = 5	N = 26	ROOT =	1.3120520776226E+02
A = 0.40	L = 5	N = 27	ROOT =	1.3642944951386E+02
A = 0.40	L = 5	N = 28	ROOT =	1.4165456087581E+02
A = 0.40	L = 5	N = 29	ROOT =	1.4688044873652E+02
A = 0.40	L = 5	N = 30	ROOT =	1.5210703281772E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.20	L = 8	N = 1	ROOT =	1.0010370743273E+01
A = 0.20	L = 8	N = 2	ROOT =	1.4651261086830E+01
A = 0.20	L = 8	N = 3	ROOT =	1.8356292660696E+01
A = 0.20	L = 8	N = 4	ROOT =	2.1839677531767E+01
A = 0.20	L = 8	N = 5	ROOT =	2.5216123618093E+01
A = 0.20	L = 8	N = 6	ROOT =	2.8523565176607E+01
A = 0.20	L = 8	N = 7	ROOT =	3.1767217209310E+01
A = 0.20	L = 8	N = 8	ROOT =	3.4934187699685E+01
A = 0.20	L = 8	N = 9	ROOT =	3.8031955395499E+01
A = 0.20	L = 8	N = 10	ROOT =	4.1140726842024E+01
A = 0.20	L = 8	N = 11	ROOT =	4.4364234534022E+01
A = 0.20	L = 8	N = 12	ROOT =	4.7733002951464E+01
A = 0.20	L = 8	N = 13	ROOT =	5.1220819233017E+01
A = 0.20	L = 8	N = 14	ROOT =	5.4794517374925E+01
A = 0.20	L = 8	N = 15	ROOT =	5.8429833021657E+01
A = 0.20	L = 8	N = 16	ROOT =	6.2110707463038E+01
A = 0.20	L = 8	N = 17	ROOT =	6.5826424078270E+01
A = 0.20	L = 8	N = 18	ROOT =	6.9569572442876E+01
A = 0.20	L = 8	N = 19	ROOT =	7.3334830911096E+01
A = 0.20	L = 8	N = 20	ROOT =	7.7118248922527E+01
A = 0.20	L = 8	N = 21	ROOT =	8.0916811806797E+01
A = 0.20	L = 8	N = 22	ROOT =	8.4728166427522E+01
A = 0.20	L = 8	N = 23	ROOT =	8.8550441380688E+01
A = 0.20	L = 8	N = 24	ROOT =	9.2382124948817E+01
A = 0.20	L = 8	N = 25	ROOT =	9.6221979685516E+01
A = 0.20	L = 8	N = 26	ROOT =	1.0006898104534E+02
A = 0.20	L = 8	N = 27	ROOT =	1.0392227226673E+02
A = 0.20	L = 8	N = 28	ROOT =	1.0778113068575E+02
A = 0.20	L = 8	N = 29	ROOT =	1.1164494179663E+02
A = 0.20	L = 8	N = 30	ROOT =	1.1551317955392E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.20	L = 9	N = 1	ROOT =	1.1079418389691E+01
A = 0.20	L = 9	N = 2	ROOT =	1.5819215394351E+01
A = 0.20	L = 9	N = 3	ROOT =	1.9581885313310E+01
A = 0.20	L = 9	N = 4	ROOT =	2.3106509400438E+01
A = 0.20	L = 9	N = 5	ROOT =	2.6516063964869E+01
A = 0.20	L = 9	N = 6	ROOT =	2.9856201043481E+01
A = 0.20	L = 9	N = 7	ROOT =	3.3144057850035E+01
A = 0.20	L = 9	N = 8	ROOT =	3.6377482934822E+01
A = 0.20	L = 9	N = 9	ROOT =	3.9541053354175E+01
A = 0.20	L = 9	N = 10	ROOT =	4.2641187452466E+01
A = 0.20	L = 9	N = 11	ROOT =	4.5745458514579E+01
A = 0.20	L = 9	N = 12	ROOT =	4.8949440126859E+01
A = 0.20	L = 9	N = 13	ROOT =	5.2292176587479E+01
A = 0.20	L = 9	N = 14	ROOT =	5.5752693390004E+01
A = 0.20	L = 9	N = 15	ROOT =	5.9300192051284E+01
A = 0.20	L = 9	N = 16	ROOT =	6.2910944797560E+01
A = 0.20	L = 9	N = 17	ROOT =	6.6568900438784E+01
A = 0.20	L = 9	N = 18	ROOT =	7.0263266874389E+01
A = 0.20	L = 9	N = 19	ROOT =	7.3986493376911E+01
A = 0.20	L = 9	N = 20	ROOT =	7.7733153756602E+01
A = 0.20	L = 9	N = 21	ROOT =	8.1499192202788E+01
A = 0.20	L = 9	N = 22	ROOT =	8.5281496376967E+01
A = 0.20	L = 9	N = 23	ROOT =	8.9077622865407E+01
A = 0.20	L = 9	N = 24	ROOT =	9.2885617128087E+01
A = 0.20	L = 9	N = 25	ROOT =	9.6703891159915E+01
A = 0.20	L = 9	N = 26	ROOT =	1.0053113772513E+02
A = 0.20	L = 9	N = 27	ROOT =	1.0436626850596E+02
A = 0.20	L = 9	N = 28	ROOT =	1.0820836897134E+02
A = 0.20	L = 9	N = 29	ROOT =	1.1205666334323E+02
A = 0.20	L = 9	N = 30	ROOT =	1.1591048921340E+02

ROOTS OF EQUATION 3

A = 0.20	L = 10	N = 1	ROOT = 1.2143204100921E+01
A = 0.20	L = 10	N = 2	ROOT = 1.6977549969650E+01
A = 0.20	L = 10	N = 3	ROOT = 2.0795966730023E+01
A = 0.20	L = 10	N = 4	ROOT = 2.4360777934005E+01
A = 0.20	L = 10	N = 5	ROOT = 2.7801779596484E+01
A = 0.20	L = 10	N = 6	ROOT = 3.1169043714539E+01
A = 0.20	L = 10	N = 7	ROOT = 3.4485791183777E+01
A = 0.20	L = 10	N = 8	ROOT = 3.7760101569936E+01
A = 0.20	L = 10	N = 9	ROOT = 4.0986415556395E+01
A = 0.20	L = 10	N = 10	ROOT = 4.4149626183441E+01
A = 0.20	L = 10	N = 11	ROOT = 4.7251104358165E+01
A = 0.20	L = 10	N = 12	ROOT = 5.0350445896056E+01
A = 0.20	L = 10	N = 13	ROOT = 5.3539229414897E+01
A = 0.20	L = 10	N = 14	ROOT = 5.6858536070676E+01
A = 0.20	L = 10	N = 15	ROOT = 6.0294049216265E+01
A = 0.20	L = 10	N = 16	ROOT = 6.3817336651442E+01
A = 0.20	L = 10	N = 17	ROOT = 6.7405236964926E+01
A = 0.20	L = 10	N = 18	ROOT = 7.1041743020168E+01
A = 0.20	L = 10	N = 19	ROOT = 7.4715963741033E+01
A = 0.20	L = 10	N = 20	ROOT = 7.8420278413322E+01
A = 0.20	L = 10	N = 21	ROOT = 8.2149166674337E+01
A = 0.20	L = 10	N = 22	ROOT = 8.5898492096057E+01
A = 0.20	L = 10	N = 23	ROOT = 8.9665066284974E+01
A = 0.20	L = 10	N = 24	ROOT = 9.3446370685625E+01
A = 0.20	L = 10	N = 25	ROOT = 9.7240406200976E+01
A = 0.20	L = 10	N = 26	ROOT = 1.0104550073720E+02
A = 0.20	L = 10	N = 27	ROOT = 1.0486029823916E+02
A = 0.20	L = 10	N = 28	ROOT = 1.0868365785950E+02
A = 0.20	L = 10	N = 29	ROOT = 1.1251461621107E+02
A = 0.20	L = 10	N = 30	ROOT = 1.1635235293201E+02

ROOTS OF EQUATION 3

A = 0.20	L = 11	N = 1	ROOT = 1.3202620396026E+01
A = 0.20	L = 11	N = 2	ROOT = 1.8127564099956E+01
A = 0.20	L = 11	N = 3	ROOT = 2.1999955015998E+01
A = 0.20	L = 11	N = 4	ROOT = 2.5604055199057E+01
A = 0.20	L = 11	N = 5	ROOT = 2.9075797513414E+01
A = 0.20	L = 11	N = 6	ROOT = 3.2468471428225E+01
A = 0.20	L = 11	N = 7	ROOT = 3.5800378930323E+01
A = 0.20	L = 11	N = 8	ROOT = 3.9108827468126E+01
A = 0.20	L = 11	N = 9	ROOT = 4.2373272995123E+01
A = 0.20	L = 11	N = 10	ROOT = 4.5594509586857E+01
A = 0.20	L = 11	N = 11	ROOT = 4.8757504290664E+01
A = 0.20	L = 11	N = 12	ROOT = 5.1861521469425E+01
A = 0.20	L = 11	N = 13	ROOT = 5.4957903030165E+01
A = 0.20	L = 11	N = 14	ROOT = 5.8132764038568E+01
A = 0.20	L = 11	N = 15	ROOT = 6.1430033524193E+01
A = 0.20	L = 11	N = 16	ROOT = 6.4843283610130E+01
A = 0.20	L = 11	N = 17	ROOT = 6.8344065093053E+01
A = 0.20	L = 11	N = 18	ROOT = 7.1910613501505E+01
A = 0.20	L = 11	N = 19	ROOT = 7.5526972154938E+01
A = 0.20	L = 11	N = 20	ROOT = 7.9182108906838E+01
A = 0.20	L = 11	N = 21	ROOT = 8.2868543517687E+01
A = 0.20	L = 11	N = 22	ROOT = 8.6580467876222E+01
A = 0.20	L = 11	N = 23	ROOT = 9.0313752325294E+01
A = 0.20	L = 11	N = 24	ROOT = 9.4065154966982E+01
A = 0.20	L = 11	N = 25	ROOT = 9.7832103118549E+01
A = 0.20	L = 11	N = 26	ROOT = 1.0161252630148E+02
A = 0.20	L = 11	N = 27	ROOT = 1.0540472650498E+02
A = 0.20	L = 11	N = 28	ROOT = 1.0920729362835E+02
A = 0.20	L = 11	N = 29	ROOT = 1.1301904354203E+02
A = 0.20	L = 11	N = 30	ROOT = 1.1683897234258E+02

ROOTS OF EQUATION 3

A =	0.20	L =	14	N =	1	ROOT =	1.6360673748457E+01
A =	0.20	L =	14	N =	2	ROOT =	2.1537120330218E+01
A =	0.20	L =	14	N =	3	ROOT =	2.5561873316915E+01
A =	0.20	L =	14	N =	4	ROOT =	2.9278730644618E+01
A =	0.20	L =	14	N =	5	ROOT =	3.2839775645169E+01
A =	0.20	L =	14	N =	6	ROOT =	3.6305981694853E+01
A =	0.20	L =	14	N =	7	ROOT =	3.9705540108418E+01
A =	0.20	L =	14	N =	8	ROOT =	4.3065615134056E+01
A =	0.20	L =	14	N =	9	ROOT =	4.6380570384787E+01
A =	0.20	L =	14	N =	10	ROOT =	4.9684462188541E+01
A =	0.20	L =	14	N =	11	ROOT =	5.2956537845190E+01
A =	0.20	L =	14	N =	12	ROOT =	5.6203175476136E+01
A =	0.20	L =	14	N =	13	ROOT =	5.9416071321781E+01
A =	0.20	L =	14	N =	14	ROOT =	6.2581504405759E+01
A =	0.20	L =	14	N =	15	ROOT =	6.5694476258755E+01
A =	0.20	L =	14	N =	16	ROOT =	6.8787457133647E+01
A =	0.20	L =	14	N =	17	ROOT =	7.1930183871826E+01
A =	0.20	L =	14	N =	18	ROOT =	7.5174947098355E+01
A =	0.20	L =	14	N =	19	ROOT =	7.8527332598901E+01
A =	0.20	L =	14	N =	20	ROOT =	8.1968676290999E+01
A =	0.20	L =	14	N =	21	ROOT =	8.5478452663892E+01
A =	0.20	L =	14	N =	22	ROOT =	8.9040917797606E+01
A =	0.20	L =	14	N =	23	ROOT =	9.2614925066732E+01
A =	0.20	L =	14	N =	24	ROOT =	9.6202566160595E+01
A =	0.20	L =	14	N =	25	ROOT =	9.9940874670060E+01
A =	0.20	L =	14	N =	26	ROOT =	1.0363710913716E+02
A =	0.20	L =	14	N =	27	ROOT =	1.0734630292519E+02
A =	0.20	L =	14	N =	28	ROOT =	1.1107297906740E+02
A =	0.20	L =	14	N =	29	ROOT =	1.1481496444736E+02
A =	0.20	L =	14	N =	30	ROOT =	1.1857846480741E+02

ROOTS OF EQUATION 3

A =	0.20	L =	15	N =	1	ROOT =	1.7408033803087E+01
A =	0.20	L =	15	N =	2	ROOT =	2.2662493433694E+01
A =	0.20	L =	15	N =	3	ROOT =	2.6735177305365E+01
A =	0.20	L =	15	N =	4	ROOT =	3.0480001947323E+01
A =	0.20	L =	15	N =	5	ROOT =	3.4077867691305E+01
A =	0.20	L =	15	N =	6	ROOT =	3.7560010307348E+01
A =	0.20	L =	15	N =	7	ROOT =	4.0990925764653E+01
A =	0.20	L =	15	N =	8	ROOT =	4.4365642567145E+01
A =	0.20	L =	15	N =	9	ROOT =	4.7704239444970E+01
A =	0.20	L =	15	N =	10	ROOT =	5.1014697453519E+01
A =	0.20	L =	15	N =	11	ROOT =	5.4302046665512E+01
A =	0.20	L =	15	N =	12	ROOT =	5.7568302221113E+01
A =	0.20	L =	15	N =	13	ROOT =	6.0811256343649E+01
A =	0.20	L =	15	N =	14	ROOT =	6.4022726491512E+01
A =	0.20	L =	15	N =	15	ROOT =	6.7189527766696E+01
A =	0.20	L =	15	N =	16	ROOT =	7.0305720537133E+01
A =	0.20	L =	15	N =	17	ROOT =	7.3398861086291E+01
A =	0.20	L =	15	N =	18	ROOT =	7.6533598120811E+01
A =	0.20	L =	15	N =	19	ROOT =	7.9763433193566E+01
A =	0.20	L =	15	N =	20	ROOT =	8.3098240939964E+01
A =	0.20	L =	15	N =	21	ROOT =	8.6521922729514E+01
A =	0.20	L =	15	N =	22	ROOT =	9.0014742522314E+01
A =	0.20	L =	15	N =	23	ROOT =	9.3561056263974E+01
A =	0.20	L =	15	N =	24	ROOT =	9.7149654464201E+01
A =	0.20	L =	15	N =	25	ROOT =	1.0077255513060E+02
A =	0.20	L =	15	N =	26	ROOT =	1.0442393536792E+02
A =	0.20	L =	15	N =	27	ROOT =	1.0809941273051E+02
A =	0.20	L =	15	N =	28	ROOT =	1.1179589851677E+02
A =	0.20	L =	15	N =	29	ROOT =	1.1550976322471E+02
A =	0.20	L =	15	N =	30	ROOT =	1.1923973817509E+02

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    ROOTS OF EQUATION 3
A =  0.30   L =   1   N =    1      ROOT =  2.0061911513759E+00
A =  0.30   L =   1   N =    2      ROOT =  5.8159967819125E+00
A =  0.30   L =   1   N =    3      ROOT =  9.7239952209272E+00
A =  0.30   L =   1   N =    4      ROOT =  1.3964672125940E+01
A =  0.30   L =   1   N =    5      ROOT =  1.8326409640403E+01
A =  0.30   L =   1   N =    6      ROOT =  2.2738011370584E+01
A =  0.30   L =   1   N =    7      ROOT =  2.7176601297138E+01
A =  0.30   L =   1   N =    8      ROOT =  3.1628043899099E+01
A =  0.30   L =   1   N =    9      ROOT =  3.6090003725157E+01
A =  0.30   L =   1   N =   10      ROOT =  4.0557302317537E+01
A =  0.30   L =   1   N =   11      ROOT =  4.5028269551400E+01
A =  0.30   L =   1   N =   12      ROOT =  4.9503118866974E+01
A =  0.30   L =   1   N =   13      ROOT =  5.3979811377385E+01
A =  0.30   L =   1   N =   14      ROOT =  5.8458247293087E+01
A =  0.30   L =   1   N =   15      ROOT =  6.2938051707341E+01
A =  0.30   L =   1   N =   16      ROOT =  6.7418950064907E+01
A =  0.30   L =   1   N =   17      ROOT =  7.1900736681714E+01
A =  0.30   L =   1   N =   18      ROOT =  7.6383254416778E+01
A =  0.30   L =   1   N =   19      ROOT =  8.0866381145522E+01
A =  0.30   L =   1   N =   20      ROOT =  8.5350020517717E+01
A =  0.30   L =   1   N =   21      ROOT =  8.9834095496760E+01
A =  0.30   L =   1   N =   22      ROOT =  9.4318543749965E+01
A =  0.30   L =   1   N =   23      ROOT =  9.8803314299254E+01
A =  0.30   L =   1   N =   24      ROOT =  1.0328836504767E+02
A =  0.30   L =   1   N =   25      ROOT =  1.0777366092563E+02
A =  0.30   L =   1   N =   26      ROOT =  1.1225917248294E+02
A =  0.30   L =   1   N =   27      ROOT =  1.1674487480641E+02
A =  0.30   L =   1   N =   28      ROOT =  1.2123074667836E+02
A =  0.30   L =   1   N =   29      ROOT =  1.2571676991580E+02
A =  0.30   L =   1   N =   30      ROOT =  1.3020292088464 9E+02
```

```
    ROOTS OF EQUATION 3
A =  0.30   L =   2   N =    1      ROOT =  3.3173341592450E+00
A =  0.30   L =   2   N =    2      ROOT =  7.0658070142803E+00
A =  0.30   L =   2   N =    3      ROOT =  1.0528111810433E+01
A =  0.30   L =   2   N =    4      ROOT =  1.4491340607566E+01
A =  0.30   L =   2   N =    5      ROOT =  1.8712596864539E+01
A =  0.30   L =   2   N =    6      ROOT =  2.3043725621810E+01
A =  0.30   L =   2   N =    7      ROOT =  2.7428750845585E+01
A =  0.30   L =   2   N =    8      ROOT =  3.1843942880546E+01
A =  0.30   L =   2   N =    9      ROOT =  3.6277705149043E+01
A =  0.30   L =   2   N =   10      ROOT =  4.0723715678529E+01
A =  0.30   L =   2   N =   11      ROOT =  4.5178234514216E+01
A =  0.30   L =   2   N =   12      ROOT =  4.9638906527199E+01
A =  0.30   L =   2   N =   13      ROOT =  5.4104173974318E+01
A =  0.30   L =   2   N =   14      ROOT =  5.8572964917997E+01
A =  0.30   L =   2   N =   15      ROOT =  6.3044517290739E+01
A =  0.30   L =   2   N =   16      ROOT =  6.7518274329980E+01
A =  0.30   L =   2   N =   17      ROOT =  7.1993819720500E+01
A =  0.30   L =   2   N =   18      ROOT =  7.6470835086350E+01
A =  0.30   L =   2   N =   19      ROOT =  8.0949076326255E+01
A =  0.30   L =   2   N =   20      ROOT =  8.5428346764771E+01
A =  0.30   L =   2   N =   21      ROOT =  8.9908492004621E+01
A =  0.30   L =   2   N =   22      ROOT =  9.4389386563516E+01
A =  0.30   L =   2   N =   23      ROOT =  9.8870927881903E+01
A =  0.30   L =   2   N =   24      ROOT =  1.0335303131359E+02
A =  0.30   L =   2   N =   25      ROOT =  1.0783562637505E+02
A =  0.30   L =   2   N =   26      ROOT =  1.1231865390417E+02
A =  0.30   L =   2   N =   27      ROOT =  1.1680206386680E+02
A =  0.30   L =   2   N =   28      ROOT =  1.2128581366712E+02
A =  0.30   L =   2   N =   29      ROOT =  1.2576986681126E+02
A =  0.30   L =   2   N =   30      ROOT =  1.3025419185249E+02
```

ROOTS OF EQUATION 3

				ROOT
A = 0.30	L = 3	N = 1	ROOT =	4.5078785567162E+00
A = 0.30	L = 3	N = 2	ROOT =	8.4479903859430E+00
A = 0.30	L = 3	N = 3	ROOT =	1.1674067926407E+01
A = 0.30	L = 3	N = 4	ROOT =	1.5200712323581E+01
A = 0.30	L = 3	N = 5	ROOT =	1.9291415662027E+01
A = 0.30	L = 3	N = 6	ROOT =	2.3500115786414E+01
A = 0.30	L = 3	N = 7	ROOT =	2.7006059369383E+01
A = 0.30	L = 3	N = 8	ROOT =	3.2165860540762E+01
A = 0.30	L = 3	N = 9	ROOT =	3.6559575470389E+01
A = 0.30	L = 3	N = 10	ROOT =	4.0972904870986E+01
A = 0.30	L = 3	N = 11	ROOT =	4.5402209524073E+01
A = 0.30	L = 3	N = 12	ROOT =	4.9842326494480E+01
A = 0.30	L = 3	N = 13	ROOT =	5.4290509931352E+01
A = 0.30	L = 3	N = 14	ROOT =	5.8744873795238E+01
A = 0.30	L = 3	N = 15	ROOT =	6.3204078944065E+01
A = 0.30	L = 3	N = 16	ROOT =	6.7667147878155E+01
A = 0.30	L = 3	N = 17	ROOT =	7.2133750150265E+01
A = 0.30	L = 3	N = 18	ROOT =	7.6602128822887E+01
A = 0.30	L = 3	N = 19	ROOT =	8.1073051759791E+01
A = 0.30	L = 3	N = 20	ROOT =	8.5545778476036E+01
A = 0.30	L = 3	N = 21	ROOT =	9.0020037034386E+01
A = 0.30	L = 3	N = 22	ROOT =	9.4495687602834E+01
A = 0.30	L = 3	N = 23	ROOT =	9.8972310653090E+01
A = 0.30	L = 3	N = 24	ROOT =	1.0344999757197E+02
A = 0.30	L = 3	N = 25	ROOT =	1.0792854528466E+02
A = 0.30	L = 3	N = 26	ROOT =	1.1240785006601E+02
A = 0.30	L = 3	N = 27	ROOT =	1.1688782430952E+02
A = 0.30	L = 3	N = 28	ROOT =	1.2136839343202E+02
A = 0.30	L = 3	N = 29	ROOT =	1.2585949353895E+02
A = 0.30	L = 3	N = 30	ROOT =	1.3033106957475E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.30	L = 4	N = 1	ROOT =	5.6453140940240E+00
A = 0.30	L = 4	N = 2	ROOT =	9.7041355126874E+00
A = 0.30	L = 4	N = 3	ROOT =	1.3033326561499E+01
A = 0.30	L = 4	N = 4	ROOT =	1.6320780174047E+01
A = 0.30	L = 4	N = 5	ROOT =	2.0065433382591E+01
A = 0.30	L = 4	N = 6	ROOT =	2.4108189604615E+01
A = 0.30	L = 4	N = 7	ROOT =	2.8307985602327E+01
A = 0.30	L = 4	N = 8	ROOT =	3.2593936300615E+01
A = 0.30	L = 4	N = 9	ROOT =	3.6932137731741E+01
A = 0.30	L = 4	N = 10	ROOT =	4.1304414247046E+01
A = 0.30	L = 4	N = 11	ROOT =	4.5700254837797E+01
A = 0.30	L = 4	N = 12	ROOT =	5.0113085481710E+01
A = 0.30	L = 4	N = 13	ROOT =	5.4538582565955E+01
A = 0.30	L = 4	N = 14	ROOT =	5.8973781216303E+01
A = 0.30	L = 4	N = 15	ROOT =	6.3416578238029E+01
A = 0.30	L = 4	N = 16	ROOT =	6.7865439282682E+01
A = 0.30	L = 4	N = 17	ROOT =	7.2319217882114E+01
A = 0.30	L = 4	N = 18	ROOT =	7.6777040132088E+01
A = 0.30	L = 4	N = 19	ROOT =	8.1238228145293E+01
A = 0.30	L = 4	N = 20	ROOT =	8.5702247595910E+01
A = 0.30	L = 4	N = 21	ROOT =	9.0168671778103E+01
A = 0.30	L = 4	N = 22	ROOT =	9.4637155727185E+01
A = 0.30	L = 4	N = 23	ROOT =	9.9107417517715E+01
A = 0.30	L = 4	N = 24	ROOT =	1.0357922447768E+02
A = 0.30	L = 4	N = 25	ROOT =	1.0805230207261E+02
A = 0.30	L = 4	N = 26	ROOT =	1.1252673000861E+02
A = 0.30	L = 4	N = 27	ROOT =	1.1700212058309E+02
A = 0.30	L = 4	N = 28	ROOT =	1.2147846129756E+02
A = 0.30	L = 4	N = 29	ROOT =	1.2595562791509E+02
A = 0.30	L = 4	N = 30	ROOT =	1.3043354199867E+02

ROOTS OF EQUATION 3

A =	0.30	L =	5	N =	1	ROOT =	6.7561650814486E+00
A =	0.30	L =	5	N =	2	ROOT =	1.1051167737156E+01
A =	0.30	L =	5	N =	3	ROOT =	1.4439782497069E+01
A =	0.30	L =	5	N =	4	ROOT =	1.7600436479516E+01
A =	0.30	L =	5	N =	5	ROOT =	2.1040165842585E+01
A =	0.30	L =	5	N =	6	ROOT =	2.4870522412631E+01
A =	0.30	L =	5	N =	7	ROOT =	2.8934012517647E+01
A =	0.30	L =	5	N =	8	ROOT =	3.3127846829449E+01
A =	0.30	L =	5	N =	9	ROOT =	3.7397857059916E+01
A =	0.30	L =	5	N =	10	ROOT =	4.1717743484489E+01
A =	0.30	L =	5	N =	11	ROOT =	4.6071942403869E+01
A =	0.30	L =	5	N =	12	ROOT =	5.0450827613695E+01
A =	0.30	L =	5	N =	13	ROOT =	5.4848098156428E+01
A =	0.30	L =	5	N =	14	ROOT =	5.9259444402047E+01
A =	0.30	L =	5	N =	15	ROOT =	6.3681813447550E+01
A =	0.30	L =	5	N =	16	ROOT =	6.8112979547235E+01
A =	0.30	L =	5	N =	17	ROOT =	7.2551280463558E+01
A =	0.30	L =	5	N =	18	ROOT =	7.6995449088717E+01
A =	0.30	L =	5	N =	19	ROOT =	8.1444502268727E+01
A =	0.30	L =	5	N =	20	ROOT =	8.5897665204534E+01
A =	0.30	L =	5	N =	21	ROOT =	9.0354319281274E+01
A =	0.30	L =	5	N =	22	ROOT =	9.4813963879843E+01
A =	0.30	L =	5	N =	23	ROOT =	9.9276190070362E+01
A =	0.30	L =	5	N =	24	ROOT =	1.0374066027793E+02
A =	0.30	L =	5	N =	25	ROOT =	1.0820709333553E+02
A =	0.30	L =	5	N =	26	ROOT =	1.1267525322921E+02
A =	0.30	L =	5	N =	27	ROOT =	1.1714494032936E+02
A =	0.30	L =	5	N =	28	ROOT =	1.2161598467402E+02
A =	0.30	L =	5	N =	29	ROOT =	1.2608824061961E+02
A =	0.30	L =	5	N =	30	ROOT =	1.3056158265409E+02

ROOTS OF EQUATION 3

A =	0.30	L =	6	N =	1	ROOT =	7.8510190529826E+00
A =	0.30	L =	6	N =	2	ROOT =	1.2273614956189E+01
A =	0.30	L =	6	N =	3	ROOT =	1.5796016967266E+01
A =	0.30	L =	6	N =	4	ROOT =	1.9000020381330E+01
A =	0.30	L =	6	N =	5	ROOT =	2.2214237792577E+01
A =	0.30	L =	6	N =	6	ROOT =	2.5793290750634E+01
A =	0.30	L =	6	N =	7	ROOT =	2.9688634880124E+01
A =	0.30	L =	6	N =	8	ROOT =	3.3767779268810E+01
A =	0.30	L =	6	N =	9	ROOT =	3.7955420606757E+01
A =	0.30	L =	6	N =	10	ROOT =	4.2212451356304E+01
A =	0.30	L =	6	N =	11	ROOT =	4.6516837039566E+01
A =	0.30	L =	6	N =	12	ROOT =	5.0855166783988E+01
A =	0.30	L =	6	N =	13	ROOT =	5.5218725715527E+01
A =	0.30	L =	6	N =	14	ROOT =	5.9601583162331E+01
A =	0.30	L =	6	N =	15	ROOT =	6.3999547976832E+01
A =	0.30	L =	6	N =	16	ROOT =	6.8409568698433E+01
A =	0.30	L =	6	N =	17	ROOT =	7.2829367972674E+01
A =	0.30	L =	6	N =	18	ROOT =	7.7257210300037E+01
A =	0.30	L =	6	N =	19	ROOT =	8.1691749192616E+01
A =	0.30	L =	6	N =	20	ROOT =	8.6131923565402E+01
A =	0.30	L =	6	N =	21	ROOT =	9.0576885702526E+01
A =	0.30	L =	6	N =	22	ROOT =	9.5025950064981E+01
A =	0.30	L =	6	N =	23	ROOT =	9.9478556202600E+01
A =	0.30	L =	6	N =	24	ROOT =	1.0393424142190E+02
A =	0.30	L =	6	N =	25	ROOT =	1.0839262033335E+02
A =	0.30	L =	6	N =	26	ROOT =	1.1285336933886E+02
A =	0.30	L =	6	N =	27	ROOT =	1.1731621470793E+02
A =	0.30	L =	6	N =	28	ROOT =	1.2178092332490E+02
A =	0.30	L =	6	N =	29	ROOT =	1.2624729541815E+02
A =	0.30	L =	6	N =	30	ROOT =	1.3071515800095E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.50	L = 5	N = 1	ROOT =	6.7175337349040E+00
A = 0.50	L = 5	N = 2	ROOT =	1.0677653937224E+01
A = 0.50	L = 5	N = 3	ROOT =	1.5050364349257E+01
A = 0.50	L = 5	N = 4	ROOT =	2.0525200945477E+01
A = 0.50	L = 5	N = 5	ROOT =	2.6395733919620E+01
A = 0.50	L = 5	N = 6	ROOT =	3.2428991554744E+01
A = 0.50	L = 5	N = 7	ROOT =	3.8544645711569E+01
A = 0.50	L = 5	N = 8	ROOT =	4.4707752100618E+01
A = 0.50	L = 5	N = 9	ROOT =	5.0900671994338E+01
A = 0.50	L = 5	N = 10	ROOT =	5.7113539501757E+01
A = 0.50	L = 5	N = 11	ROOT =	6.3340406563660E+01
A = 0.50	L = 5	N = 12	ROOT =	6.9577474502067E+01
A = 0.50	L = 5	N = 13	ROOT =	7.5822204081050E+01
A = 0.50	L = 5	N = 14	ROOT =	8.2072833758311E+01
A = 0.50	L = 5	N = 15	ROOT =	8.8328103262653E+01
A = 0.50	L = 5	N = 16	ROOT =	9.4587007215646E+01
A = 0.50	L = 5	N = 17	ROOT =	1.0084909086570E+02
A = 0.50	L = 5	N = 18	ROOT =	1.0711358248266E+02
A = 0.50	L = 5	N = 19	ROOT =	1.1338014820863E+02
A = 0.50	L = 5	N = 20	ROOT =	1.1964846112179E+02
A = 0.50	L = 5	N = 21	ROOT =	1.2591825955478E+02
A = 0.50	L = 5	N = 22	ROOT =	1.3218933159190E+02
A = 0.50	L = 5	N = 23	ROOT =	1.3846150179440E+02
A = 0.50	L = 5	N = 24	ROOT =	1.4473463200334E+02
A = 0.50	L = 5	N = 25	ROOT =	1.5100859917510E+02
A = 0.50	L = 5	N = 26	ROOT =	1.5728330251766E+02
A = 0.50	L = 5	N = 27	ROOT =	1.6355865707435E+02
A = 0.50	L = 5	N = 28	ROOT =	1.6983459286103E+02
A = 0.50	L = 5	N = 29	ROOT =	1.7611104542378E+02
A = 0.50	L = 5	N = 30	ROOT =	1.8238796205982E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.50	L = 6	N = 1	ROOT =	7.8311178626560E+00
A = 0.50	L = 6	N = 2	ROOT =	1.1916503006126E+01
A = 0.50	L = 6	N = 3	ROOT =	1.5920424117329E+01
A = 0.50	L = 6	N = 4	ROOT =	2.1130518152758E+01
A = 0.50	L = 6	N = 5	ROOT =	2.6854203494367E+01
A = 0.50	L = 6	N = 6	ROOT =	3.2802804790542E+01
A = 0.50	L = 6	N = 7	ROOT =	3.8850074429024E+01
A = 0.50	L = 6	N = 8	ROOT =	4.4977453073087E+01
A = 0.50	L = 6	N = 9	ROOT =	5.1137275929035E+01
A = 0.50	L = 6	N = 10	ROOT =	5.7324237822704E+01
A = 0.50	L = 6	N = 11	ROOT =	6.3530285949586E+01
A = 0.50	L = 6	N = 12	ROOT =	6.9750262793551E+01
A = 0.50	L = 6	N = 13	ROOT =	7.5980713341114E+01
A = 0.50	L = 6	N = 14	ROOT =	8.2219236752151E+01
A = 0.50	L = 6	N = 15	ROOT =	8.8464113142408E+01
A = 0.50	L = 6	N = 16	ROOT =	9.4714078337207E+01
A = 0.50	L = 6	N = 17	ROOT =	1.0096182428803E+02
A = 0.50	L = 6	N = 18	ROOT =	1.0722569789900E+02
A = 0.50	L = 6	N = 19	ROOT =	1.1348605818445E+02
A = 0.50	L = 6	N = 20	ROOT =	1.1974801551898E+02
A = 0.50	L = 6	N = 21	ROOT =	1.2601361136736E+02
A = 0.50	L = 6	N = 22	ROOT =	1.3228015526364E+02
A = 0.50	L = 6	N = 23	ROOT =	1.3854209396673E+02
A = 0.50	L = 6	N = 24	ROOT =	1.4481757720154E+02
A = 0.50	L = 6	N = 25	ROOT =	1.5108809479215E+02
A = 0.50	L = 6	N = 26	ROOT =	1.5735962444413E+02
A = 0.50	L = 6	N = 27	ROOT =	1.6363204957652E+02
A = 0.50	L = 6	N = 28	ROOT =	1.6590527084572E+02
A = 0.50	L = 6	N = 29	ROOT =	1.7617920307416E+02
A = 0.50	L = 6	N = 30	ROOT =	1.8245377281294E+02

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1
     ROOTS OF EQUATION 3

  A =  0.50  L =   7  N =    1      ROOT =  8.9249400762364E+00
  A =  0.50  L =   7  N =    2      ROOT =  1.3177792612584E+01
  A =  0.50  L =   7  N =    3      ROOT =  1.6900522384222E+01
  A =  0.50  L =   7  N =    4      ROOT =  2.1822790566965E+01
  A =  0.50  L =   7  N =    5      ROOT =  2.7390516561964E+01
  A =  0.50  L =   7  N =    6      ROOT =  3.3234016320020E+01
  A =  0.50  L =   7  N =    7      ROOT =  3.9221232605869E+01
  A =  0.50  L =   7  N =    8      ROOT =  4.5290472010100E+01
  A =  0.50  L =   7  N =    9      ROOT =  5.1412197033718E+01
  A =  0.50  L =   7  N =   10      ROOT =  5.7569257099289E+01
  A =  0.50  L =   7  N =   11      ROOT =  6.3751226112257E+01
  A =  0.50  L =   7  N =   12      ROOT =  6.9951405714930E+01
  A =  0.50  L =   7  N =   13      ROOT =  7.6165297319230E+01
  A =  0.50  L =   7  N =   14      ROOT =  8.2389768885275E+01
  A =  0.50  L =   7  N =   15      ROOT =  8.8622573700863E+01
  A =  0.50  L =   7  N =   16      ROOT =  9.4862056881983E+01
  A =  0.50  L =   7  N =   17      ROOT =  1.0110697577356E+02
  A =  0.50  L =   7  N =   18      ROOT =  1.0735637650752E+02
  A =  0.50  L =   7  N =   19      ROOT =  1.1360951635122E+02
  A =  0.50  L =   7  N =   20      ROOT =  1.1986580755125E+02
  A =  0.50  L =   7  N =   21      ROOT =  1.2612477952074E+02
  A =  0.50  L =   7  N =   22      ROOT =  1.3238605002582E+02
  A =  0.50  L =   7  N =   23      ROOT =  1.3864930902479E+02
  A =  0.50  L =   7  N =   24      ROOT =  1.4491429581531E+02
  A =  0.50  L =   7  N =   25      ROOT =  1.5118079557434E+02
  A =  0.50  L =   7  N =   26      ROOT =  1.5744862782536E+02
  A =  0.50  L =   7  N =   27      ROOT =  1.6371763965929E+02
  A =  0.50  L =   7  N =   28      ROOT =  1.6998769761119E+02
  A =  0.50  L =   7  N =   29      ROOT =  1.7625869263039E+02
  A =  0.50  L =   7  N =   30      ROOT =  1.8253052708129E+02
```

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1
     ROOTS OF EQUATION 3

  A =  0.50  L =   8  N =    1      ROOT =  1.0005586579688E+01
  A =  0.50  L =   8  N =    2      ROOT =  1.4434420494925E+01
  A =  0.50  L =   8  N =    3      ROOT =  1.7977527218522E+01
  A =  0.50  L =   8  N =    4      ROOT =  2.2590075496421E+01
  A =  0.50  L =   8  N =    5      ROOT =  2.7990047019449E+01
  A =  0.50  L =   8  N =    6      ROOT =  3.3723384452343E+01
  A =  0.50  L =   8  N =    7      ROOT =  3.9633067974890E+01
  A =  0.50  L =   8  N =    8      ROOT =  4.5646105793736E+01
  A =  0.50  L =   8  N =    9      ROOT =  5.1724947015382E+01
  A =  0.50  L =   8  N =   10      ROOT =  5.7848244880161E+01
  A =  0.50  L =   8  N =   11      ROOT =  6.4002965427261E+01
  A =  0.50  L =   8  N =   12      ROOT =  7.0180784073639E+01
  A =  0.50  L =   8  N =   13      ROOT =  7.6375800103523E+01
  A =  0.50  L =   8  N =   14      ROOT =  8.2584307305697E+01
  A =  0.50  L =   8  N =   15      ROOT =  8.8803384790289E+01
  A =  0.50  L =   8  N =   16      ROOT =  9.5030941981055E+01
  A =  0.50  L =   8  N =   17      ROOT =  1.0126540399701E+02
  A =  0.50  L =   8  N =   18      ROOT =  1.0750586250089E+02
  A =  0.50  L =   8  N =   19      ROOT =  1.1375047542793E+02
  A =  0.50  L =   8  N =   20      ROOT =  1.1999939692117E+02
  A =  0.50  L =   8  N =   21      ROOT =  1.2625172941865E+02
  A =  0.50  L =   8  N =   22      ROOT =  1.3250869031985E+02
  A =  0.50  L =   8  N =   23      ROOT =  1.3876647657291E+02
  A =  0.50  L =   8  N =   24      ROOT =  1.4502476577673E+02
  A =  0.50  L =   8  N =   25      ROOT =  1.5128668197152E+02
  A =  0.50  L =   8  N =   26      ROOT =  1.5755029481557E+02
  A =  0.50  L =   8  N =   27      ROOT =  1.6381540924341E+02
  A =  0.50  L =   8  N =   28      ROOT =  1.7008185896658E+02
  A =  0.50  L =   8  N =   29      ROOT =  1.7634950135926E+02
  A =  0.50  L =   8  N =   30      ROOT =  1.8261821339655E+02
```

ROOTS OF EQUATION 3

A = 0.50	L = 9	N = 1	ROOT =	1.1077144397341E+01
A = 0.50	L = 9	N = 2	ROOT =	1.5671111831280E+01
A = 0.50	L = 9	N = 3	ROOT =	1.9134544325474E+01
A = 0.50	L = 9	N = 4	ROOT =	2.3452099956524E+01
A = 0.50	L = 9	N = 5	ROOT =	2.8654233330763E+01
A = 0.50	L = 9	N = 6	ROOT =	3.4266795738907E+01
A = 0.50	L = 9	N = 7	ROOT =	4.0092447714815E+01
A = 0.50	L = 9	N = 8	ROOT =	4.6043584428343E+01
A = 0.50	L = 9	N = 9	ROOT =	5.2074983670771E+01
A = 0.50	L = 9	N = 10	ROOT =	5.8160808437019E+01
A = 0.50	L = 9	N = 11	ROOT =	6.4285210937026E+01
A = 0.50	L = 9	N = 12	ROOT =	7.0437934017293E+01
A = 0.50	L = 9	N = 13	ROOT =	7.6612049984781E+01
A = 0.50	L = 9	N = 14	ROOT =	8.2802713285202E+01
A = 0.50	L = 9	N = 15	ROOT =	8.9006435638623E+01
A = 0.50	L = 9	N = 16	ROOT =	9.5220642040056E+01
A = 0.50	L = 9	N = 17	ROOT =	1.0144339123661E+02
A = 0.50	L = 9	N = 18	ROOT =	1.0767319236200E+02
A = 0.50	L = 9	N = 19	ROOT =	1.1390888171489E+02
A = 0.50	L = 9	N = 20	ROOT =	1.2014953783132E+02
A = 0.50	L = 9	N = 21	ROOT =	1.2639442167017E+02
A = 0.50	L = 9	N = 22	ROOT =	1.3264293366364E+02
A = 0.50	L = 9	N = 23	ROOT =	1.3889458234151E+02
A = 0.50	L = 9	N = 24	ROOT =	1.4514896105053E+02
A = 0.50	L = 9	N = 25	ROOT =	1.5140573043540E+02
A = 0.50	L = 9	N = 26	ROOT =	1.5766460508526E+02
A = 0.50	L = 9	N = 27	ROOT =	1.6392534323527E+02
A = 0.50	L = 9	N = 28	ROOT =	1.7018773873859E+02
A = 0.50	L = 9	N = 29	ROOT =	1.7645161474546E+02
A = 0.50	L = 9	N = 30	ROOT =	1.8271681868343E+02

ROOTS OF EQUATION 3

A = 0.50	L = 10	N = 1	ROOT =	1.2142137702025E+01
A = 0.50	L = 10	N = 2	ROOT =	1.6882353371817E+01
A = 0.50	L = 10	N = 3	ROOT =	2.0350702103020E+01
A = 0.50	L = 10	N = 4	ROOT =	2.4384283165606E+01
A = 0.50	L = 10	N = 5	ROOT =	2.9380703940503E+01
A = 0.50	L = 10	N = 6	ROOT =	3.4863317205962E+01
A = 0.50	L = 10	N = 7	ROOT =	4.0598101864459E+01
A = 0.50	L = 10	N = 8	ROOT =	4.6482082022242E+01
A = 0.50	L = 10	N = 9	ROOT =	5.2461720236445E+01
A = 0.50	L = 10	N = 10	ROOT =	5.8506518438896E+01
A = 0.50	L = 10	N = 11	ROOT =	6.4597640589894E+01
A = 0.50	L = 10	N = 12	ROOT =	7.0722848457971E+01
A = 0.50	L = 10	N = 13	ROOT =	7.6873850394692E+01
A = 0.50	L = 10	N = 14	ROOT =	8.3044832050967E+01
A = 0.50	L = 10	N = 15	ROOT =	8.9231601375964E+01
A = 0.50	L = 10	N = 16	ROOT =	9.5431055058529E+01
A = 0.50	L = 10	N = 17	ROOT =	1.0164005290733E+02
A = 0.50	L = 10	N = 18	ROOT =	1.0705919503771E+02
A = 0.50	L = 10	N = 19	ROOT =	1.1408467522482E+02
A = 0.50	L = 10	N = 20	ROOT =	1.2031617900487E+02
A = 0.50	L = 10	N = 21	ROOT =	1.2655281224787E+02
A = 0.50	L = 10	N = 22	ROOT =	1.3279384871300E+02
A = 0.50	L = 10	N = 23	ROOT =	1.3903869307592E+02
A = 0.50	L = 10	N = 24	ROOT =	1.4528685247323E+02
A = 0.50	L = 10	N = 25	ROOT =	1.5153791545134E+02
A = 0.50	L = 10	N = 26	ROOT =	1.5779153584715E+02
A = 0.50	L = 10	N = 27	ROOT =	1.6404742034018E+02
A = 0.50	L = 10	N = 28	ROOT =	1.7030531878914E+02
A = 0.50	L = 10	N = 29	ROOT =	1.7656501650842E+02
A = 0.50	L = 10	N = 30	ROOT =	1.8282632027211E+02

```
    ROOTS OF EQUATION 3
A =  0.50  L =  11  N =    1      ROOT =  1.3202125669567E+01
A =  0.50  L =  11  N =    2      ROOT =  1.8069223840210E+01
A =  0.50  L =  11  N =    3      ROOT =  2.1603105404295E+01
A =  0.50  L =  11  N =    4      ROOT =  2.5389281630711E+01
A =  0.50  L =  11  N =    5      ROOT =  3.0167394840216E+01
A =  0.50  L =  11  N =    6      ROOT =  3.5511249933678E+01
A =  0.50  L =  11  N =    7      ROOT =  4.1149047626123E+01
A =  0.50  L =  11  N =    8      ROOT =  4.6960733067652E+01
A =  0.50  L =  11  N =    9      ROOT =  5.2884530627563E+01
A =  0.50  L =  11  N =   10      ROOT =  5.8884912089159E+01
A =  0.50  L =  11  N =   11      ROOT =  6.4939905658161E+01
A =  0.50  L =  11  N =   12      ROOT =  7.1035178620029E+01
A =  0.50  L =  11  N =   13      ROOT =  7.7160991618626E+01
A =  0.50  L =  11  N =   14      ROOT =  8.3310497523367E+01
A =  0.50  L =  11  N =   15      ROOT =  8.9478745485863E+01
A =  0.50  L =  11  N =   16      ROOT =  9.5662068982259E+01
A =  0.50  L =  11  N =   17      ROOT =  1.0185769559868E+02
A =  0.50  L =  11  N =   18      ROOT =  1.0806349253013E+02
A =  0.50  L =  11  N =   19      ROOT =  1.1427778982814E+02
A =  0.50  L =  11  N =   20      ROOT =  1.2049926419712E+02
A =  0.50  L =  11  N =   21      ROOT =  1.2672685253460E+02
A =  0.50  L =  11  N =   22      ROOT =  1.3295969132996E+02
A =  0.50  L =  11  N =   23      ROOT =  1.3919707202074E+02
A =  0.50  L =  11  N =   24      ROOT =  1.4543840779687E+02
A =  0.50  L =  11  N =   25      ROOT =  1.5168320857378E+02
A =  0.50  L =  11  N =   26      ROOT =  1.5793106180521E+02
A =  0.50  L =  11  N =   27      ROOT =  1.6418161812627E+02
A =  0.50  L =  11  N =   28      ROOT =  1.7043457903522E+02
A =  0.50  L =  11  N =   29      ROOT =  1.7668968861487E+02
A =  0.50  L =  11  N =   30      ROOT =  1.8294672591217E+02
```

```
    ROOTS OF EQUATION 3
A =  0.50  L =  12  N =    1      ROOT =  1.4258113337800E+01
A =  0.50  L =  12  N =    2      ROOT =  1.9235836471380E+01
A =  0.50  L =  12  N =    3      ROOT =  2.2870051936406E+01
A =  0.50  L =  12  N =    4      ROOT =  2.6464014598426E+01
A =  0.50  L =  12  N =    5      ROOT =  3.1012646755700E+01
A =  0.50  L =  12  N =    6      ROOT =  3.6200984102467E+01
A =  0.50  L =  12  N =    7      ROOT =  4.1743814368170E+01
A =  0.50  L =  12  N =    8      ROOT =  4.7478637143159E+01
A =  0.50  L =  12  N =    9      ROOT =  5.3342756774165E+01
A =  0.50  L =  12  N =   10      ROOT =  5.9295501274920E+01
A =  0.50  L =  12  N =   11      ROOT =  6.5311633307247E+01
A =  0.50  L =  12  N =   12      ROOT =  7.1374635695623E+01
A =  0.50  L =  12  N =   13      ROOT =  7.7473245870759E+01
A =  0.50  L =  12  N =   14      ROOT =  8.3599524998936E+01
A =  0.50  L =  12  N =   15      ROOT =  8.9747719945099E+01
A =  0.50  L =  12  N =   16      ROOT =  9.5913562086379E+01
A =  0.50  L =  12  N =   17      ROOT =  1.0209381915571E+02
A =  0.50  L =  12  N =   18      ROOT =  1.0828599978720E+02
A =  0.50  L =  12  N =   19      ROOT =  1.1448815341212E+02
A =  0.50  L =  12  N =   20      ROOT =  1.2069873151789E+02
A =  0.50  L =  12  N =   21      ROOT =  1.2691648942678E+02
A =  0.50  L =  12  N =   22      ROOT =  1.3314041545791E+02
A =  0.50  L =  12  N =   23      ROOT =  1.3936967897968E+02
A =  0.50  L =  12  N =   24      ROOT =  1.4560359173706E+02
A =  0.50  L =  12  N =   25      ROOT =  1.5184157866526E+02
A =  0.50  L =  12  N =   26      ROOT =  1.5808315558649E+02
A =  0.50  L =  12  N =   27      ROOT =  1.6432791197081E+02
A =  0.50  L =  12  N =   28      ROOT =  1.7057549747071E+02
A =  0.50  L =  12  N =   29      ROOT =  1.7682561130106E+02
A =  0.50  L =  12  N =   30      ROOT =  1.8307799378793E+02
```

ROOTS OF EQUATION 3

			ROOT
A = 0.50	L = 13	N = 1	ROOT = 1.531078357969E+01
A = 0.50	L = 13	N = 2	ROOT = 2.038608523041E+01
A = 0.50	L = 13	N = 3	ROOT = 2.413403130244E+01
A = 0.50	L = 13	N = 4	ROOT = 2.760231165374E+01
A = 0.50	L = 13	N = 5	ROOT = 3.191525520858E+01
A = 0.50	L = 13	N = 6	ROOT = 3.695505620208E+01
A = 0.50	L = 13	N = 7	ROOT = 4.238126932446E+01
A = 0.50	L = 13	N = 8	ROOT = 4.803487993507E+01
A = 0.50	L = 13	N = 9	ROOT = 5.383571507755E+01
A = 0.50	L = 13	N = 10	ROOT = 5.973776888211E+01
A = 0.50	L = 13	N = 11	ROOT = 6.571242928879E+01
A = 0.50	L = 13	N = 12	ROOT = 7.174091259205E+01
A = 0.50	L = 13	N = 13	ROOT = 7.781037008184E+01
A = 0.50	L = 13	N = 14	ROOT = 8.391172003170E+01
A = 0.50	L = 13	N = 15	ROOT = 9.003836579797E+01
A = 0.50	L = 13	N = 16	ROOT = 9.618540386804E+01
A = 0.50	L = 13	N = 17	ROOT = 1.023491133817E+02
A = 0.50	L = 13	N = 18	ROOT = 1.085266250087E+02
A = 0.50	L = 13	N = 19	ROOT = 1.147156880520E+02
A = 0.50	L = 13	N = 20	ROOT = 1.209145143640E+02
A = 0.50	L = 13	N = 21	ROOT = 1.271216654378E+02
A = 0.50	L = 13	N = 22	ROOT = 1.333359712031E+02
A = 0.50	L = 13	N = 23	ROOT = 1.395564703805E+02
A = 0.50	L = 13	N = 24	ROOT = 1.457823660253E+02
A = 0.50	L = 13	N = 25	ROOT = 1.520129919389E+02
A = 0.50	L = 13	N = 26	ROOT = 1.582477869760E+02
A = 0.50	L = 13	N = 27	ROOT = 1.644862751689E+02
A = 0.50	L = 13	N = 28	ROOT = 1.707280501902E+02
A = 0.50	L = 13	N = 29	ROOT = 1.769727630907E+02
A = 0.50	L = 13	N = 30	ROOT = 1.832201125352E+02

ROOTS OF EQUATION 3

			ROOT
A = 0.50	L = 14	N = 1	ROOT = 1.636062668058E+01
A = 0.50	L = 14	N = 2	ROOT = 2.152602624263E+01
A = 0.50	L = 14	N = 3	ROOT = 2.538352015018E+01
A = 0.50	L = 14	N = 4	ROOT = 2.879455303634E+01
A = 0.50	L = 14	N = 5	ROOT = 3.287442107950E+01
A = 0.50	L = 14	N = 6	ROOT = 3.774284143152E+01
A = 0.50	L = 14	N = 7	ROOT = 4.306824419352E+01
A = 0.50	L = 14	N = 8	ROOT = 4.862854253905E+01
A = 0.50	L = 14	N = 9	ROOT = 5.436270782824E+01
A = 0.50	L = 14	N = 10	ROOT = 6.021118123503E+01
A = 0.50	L = 14	N = 11	ROOT = 6.614188073211E+01
A = 0.50	L = 14	N = 12	ROOT = 7.213368755342E+01
A = 0.50	L = 14	N = 13	ROOT = 7.817210699141E+01
A = 0.50	L = 14	N = 14	ROOT = 8.424687524793E+01
A = 0.50	L = 14	N = 15	ROOT = 9.035051375214E+01
A = 0.50	L = 14	N = 16	ROOT = 9.647745307812E+01
A = 0.50	L = 14	N = 17	ROOT = 1.026234619611E+02
A = 0.50	L = 14	N = 18	ROOT = 1.087852698887E+02
A = 0.50	L = 14	N = 19	ROOT = 1.149603101997E+02
A = 0.50	L = 14	N = 20	ROOT = 1.211465416169E+02
A = 0.50	L = 14	N = 21	ROOT = 1.273423180092E+02
A = 0.50	L = 14	N = 22	ROOT = 1.335463049227E+02
A = 0.50	L = 14	N = 23	ROOT = 1.397573993454E+02
A = 0.50	L = 14	N = 24	ROOT = 1.459746894658E+02
A = 0.50	L = 14	N = 25	ROOT = 1.521974120645E+02
A = 0.50	L = 14	N = 26	ROOT = 1.584249237545E+02
A = 0.50	L = 14	N = 27	ROOT = 1.646566789247E+02
A = 0.50	L = 14	N = 28	ROOT = 1.708922114151E+02
A = 0.50	L = 14	N = 29	ROOT = 1.771311200171E+02
A = 0.50	L = 14	N = 30	ROOT = 1.833730612596E+02

ROOTS OF EQUATION 3

A =	0.50	L =	15	N =	1	ROOT = 1.7400012590335E+01
A =	0.50	L =	15	N =	2	ROOT = 2.2656384339940E+01
A =	0.50	L =	15	N =	3	ROOT = 2.6611461173070E+01
A =	0.50	L =	15	N =	4	ROOT = 3.0027539011865E+01
A =	0.50	L =	15	N =	5	ROOT = 3.3089511408440E+01
A =	0.50	L =	15	N =	6	ROOT = 3.8587430688496E+01
A =	0.50	L =	15	N =	7	ROOT = 4.3779643039540E+01
A =	0.50	L =	15	N =	8	ROOT = 4.9298715800770E+01
A =	0.50	L =	15	N =	9	ROOT = 5.4923022750529E+01
A =	0.50	L =	15	N =	10	ROOT = 6.0715188626541E+01
A =	0.50	L =	15	N =	11	ROOT = 6.6599559010715E+01
A =	0.50	L =	15	N =	12	ROOT = 7.2552617055309E+01
A =	0.50	L =	15	N =	13	ROOT = 7.8558106428382E+01
A =	0.50	L =	15	N =	14	ROOT = 8.4604772043841E+01
A =	0.50	L =	15	N =	15	ROOT = 9.0683984821375E+01
A =	0.50	L =	15	N =	16	ROOT = 9.6789562993716E+01
A =	0.50	L =	15	N =	17	ROOT = 1.0291674100022E+02
A =	0.50	L =	15	N =	18	ROOT = 1.0906182987159E+02
A =	0.50	L =	15	N =	19	ROOT = 1.1522193087104E+02
A =	0.50	L =	15	N =	20	ROOT = 1.2139473559762E+02
A =	0.50	L =	15	N =	21	ROOT = 1.2757838362904E+02
A =	0.50	L =	15	N =	22	ROOT = 1.3377135931800E+02
A =	0.50	L =	15	N =	23	ROOT = 1.3997241576557E+02
A =	0.50	L =	15	N =	24	ROOT = 1.4618051799532E+02
A =	0.50	L =	15	N =	25	ROOT = 1.5239479991733E+02
A =	0.50	L =	15	N =	26	ROOT = 1.5861453113303E+02
A =	0.50	L =	15	N =	27	ROOT = 1.6483909239250E+02
A =	0.50	L =	15	N =	28	ROOT = 1.7106795352005E+02
A =	0.50	L =	15	N =	29	ROOT = 1.7730065964626E+02
A =	0.50	L =	15	N =	30	ROOT = 1.8353681755586E+02

ROOTS OF EQUATION 3

A =	0.60	L =	1	N =	1	ROOT = 1.7461102082980E+00
A =	0.60	L =	1	N =	2	ROOT = 8.2767630082660E+00
A =	0.60	L =	1	N =	3	ROOT = 1.5920290927267E+01
A =	0.60	L =	1	N =	4	ROOT = 2.3703473340280E+01
A =	0.60	L =	1	N =	5	ROOT = 3.1520573339038E+01
A =	0.60	L =	1	N =	6	ROOT = 3.9354005684784E+01
A =	0.60	L =	1	N =	7	ROOT = 4.7194634195879E+01
A =	0.60	L =	1	N =	8	ROOT = 5.5038507568795E+01
A =	0.60	L =	1	N =	9	ROOT = 6.2884908564071E+01
A =	0.60	L =	1	N =	10	ROOT = 7.0732994446272E+01
A =	0.60	L =	1	N =	11	ROOT = 7.8582259651544E+01
A =	0.60	L =	1	N =	12	ROOT = 8.6432382493933E+01
A =	0.60	L =	1	N =	13	ROOT = 9.4283140853449E+01
A =	0.60	L =	1	N =	14	ROOT = 1.0213440932527E+02
A =	0.60	L =	1	N =	15	ROOT = 1.0998605803746E+02
A =	0.60	L =	1	N =	16	ROOT = 1.1783001931903E+02
A =	0.60	L =	1	N =	17	ROOT = 1.2569023246805E+02
A =	0.60	L =	1	N =	18	ROOT = 1.3354265367061E+02
A =	0.60	L =	1	N =	19	ROOT = 1.4139524826800E+02
A =	0.60	L =	1	N =	20	ROOT = 1.4924798807679E+02
A =	0.60	L =	1	N =	21	ROOT = 1.5710085359199E+02
A =	0.60	L =	1	N =	22	ROOT = 1.6495382468399E+02
A =	0.60	L =	1	N =	23	ROOT = 1.7280688764627E+02
A =	0.60	L =	1	N =	24	ROOT = 1.8066003049529E+02
A =	0.60	L =	1	N =	25	ROOT = 1.8851324324486E+02
A =	0.60	L =	1	N =	26	ROOT = 1.9636651750664E+02
A =	0.60	L =	1	N =	27	ROOT = 2.0421984618285E+02
A =	0.60	L =	1	N =	28	ROOT = 2.1207322322730E+02
A =	0.60	L =	1	N =	29	ROOT = 2.1992664345752E+02
A =	0.60	L =	1	N =	30	ROOT = 2.2778010240592E+02

```
1
      ROOTS OF EQUATION 3

A =   0.60   L =   2   N =    1        ROOT =   3.0124573503985E+00
A =   0.60   L =   2   N =    2        ROOT =   8.7057356752650E+00
A =   0.60   L =   2   N =    3        ROOT =   1.6133831105067E+01
A =   0.60   L =   2   N =    4        ROOT =   2.3845376174774E+01
A =   0.60   L =   2   N =    5        ROOT =   3.1628347762386E+01
A =   0.60   L =   2   N =    6        ROOT =   3.9439785261845E+01
A =   0.60   L =   2   N =    7        ROOT =   4.7265426174188E+01
A =   0.60   L =   2   N =    8        ROOT =   5.5099173701238E+01
A =   0.60   L =   2   N =    9        ROOT =   6.2937984169460E+01
A =   0.60   L =   2   N =   10        ROOT =   7.0780168319642E+01
A =   0.60   L =   2   N =   11        ROOT =   7.8624713269674E+01
A =   0.60   L =   2   N =   12        ROOT =   8.6470974759340E+01
A =   0.60   L =   2   N =   13        ROOT =   9.4310523428174E+01
A =   0.60   L =   2   N =   14        ROOT =   1.0216706210265E+02
A =   0.60   L =   2   N =   15        ROOT =   1.1001637855781E+02
A =   0.60   L =   2   N =   16        ROOT =   1.1786631718613E+02
A =   0.60   L =   2   N =   17        ROOT =   1.2571676129645E+02
A =   0.60   L =   2   N =   18        ROOT =   1.3356762166332E+02
A =   0.60   L =   2   N =   19        ROOT =   1.4141882089496E+02
A =   0.60   L =   2   N =   20        ROOT =   1.4927032821216E+02
A =   0.60   L =   2   N =   21        ROOT =   1.5712207579412E+02
A =   0.60   L =   2   N =   22        ROOT =   1.6497403616059E+02
A =   0.60   L =   2   N =   23        ROOT =   1.7282618031408E+02
A =   0.60   L =   2   N =   24        ROOT =   1.8067848425719E+02
A =   0.60   L =   2   N =   25        ROOT =   1.8853092802072E+02
A =   0.60   L =   2   N =   26        ROOT =   1.9638349482428E+02
A =   0.60   L =   2   N =   27        ROOT =   2.0423617046945E+02
A =   0.60   L =   2   N =   28        ROOT =   2.1208894286152E+02
A =   0.60   L =   2   N =   29        ROOT =   2.1994180163381E+02
A =   0.60   L =   2   N =   30        ROOT =   2.2779473704960E+02
```

```
1
      ROOTS OF EQUATION 3

A =   0.60   L =   3   N =    1        ROOT =   4.2361907920799E+00
A =   0.60   L =   3   N =    2        ROOT =   9.3183307165046E+00
A =   0.60   L =   3   N =    3        ROOT =   1.6449751938792E+01
A =   0.60   L =   3   N =    4        ROOT =   2.4056855133381E+01
A =   0.60   L =   3   N =    5        ROOT =   3.1787189969904E+01
A =   0.60   L =   3   N =    6        ROOT =   3.9566947453185E+01
A =   0.60   L =   3   N =    7        ROOT =   4.7371435296923E+01
A =   0.60   L =   3   N =    8        ROOT =   5.5190059057007E+01
A =   0.60   L =   3   N =    9        ROOT =   6.3017521664192E+01
A =   0.60   L =   3   N =   10        ROOT =   7.0850875724403E+01
A =   0.60   L =   3   N =   11        ROOT =   7.8680354717827E+01
A =   0.60   L =   3   N =   12        ROOT =   8.6520833845958E+01
A =   0.60   L =   3   N =   13        ROOT =   9.4371563176106E+01
A =   0.60   L =   3   N =   14        ROOT =   1.0221602348968E+02
A =   0.60   L =   3   N =   15        ROOT =   1.1006184389748E+02
A =   0.60   L =   3   N =   16        ROOT =   1.1790075240335E+02
A =   0.60   L =   3   N =   17        ROOT =   1.2575654500372E+02
A =   0.60   L =   3   N =   18        ROOT =   1.3360506569192E+02
A =   0.60   L =   3   N =   19        ROOT =   1.4145419312684E+02
A =   0.60   L =   3   N =   20        ROOT =   1.4930383151123E+02
A =   0.60   L =   3   N =   21        ROOT =   1.5715390420616E+02
A =   0.60   L =   3   N =   22        ROOT =   1.6500434916902E+02
A =   0.60   L =   3   N =   23        ROOT =   1.7285511564019E+02
A =   0.60   L =   3   N =   24        ROOT =   1.8070616168303E+02
A =   0.60   L =   3   N =   25        ROOT =   1.8855745235287E+02
A =   0.60   L =   3   N =   26        ROOT =   1.9640895829532E+02
A =   0.60   L =   3   N =   27        ROOT =   2.0426065467100E+02
A =   0.60   L =   3   N =   28        ROOT =   2.1212520232373E+02
A =   0.60   L =   3   N =   29        ROOT =   2.1996453711464E+02
A =   0.60   L =   3   N =   30        ROOT =   2.2781668940986E+02
```

ROOTS OF EQUATION 3

						ROOT
A = 0.60	L = 4	N = 1	ROOT = 5.4303384496110E+00
A = 0.60	L = 4	N = 2	ROOT = 1.0086323435684E+01
A = 0.60	L = 4	N = 3	ROOT = 1.6863273496767E+01
A = 0.60	L = 4	N = 4	ROOT = 2.4336330427729E+01
A = 0.60	L = 4	N = 5	ROOT = 3.1997009033595E+01
A = 0.60	L = 4	N = 6	ROOT = 3.9735929338872E+01
A = 0.60	L = 4	N = 7	ROOT = 4.7512449240668E+01
A = 0.60	L = 4	N = 8	ROOT = 5.5311031451122E+01
A = 0.60	L = 4	N = 9	ROOT = 6.3123430500207E+01
A = 0.60	L = 4	N = 10	ROOT = 7.0945052070707E+01
A = 0.60	L = 4	N = 11	ROOT = 7.8773137401119E+01
A = 0.60	L = 4	N = 12	ROOT = 8.6605924691763E+01
A = 0.60	L = 4	N = 13	ROOT = 9.4442240739592E+01
A = 0.60	L = 4	N = 14	ROOT = 1.0228127220006E+02
A = 0.60	L = 4	N = 15	ROOT = 1.1012243780090E+02
A = 0.60	L = 4	N = 16	ROOT = 1.1796531109652E+02
A = 0.60	L = 4	N = 17	ROOT = 1.2580957214454E+02
A = 0.60	L = 4	N = 18	ROOT = 1.3365497621650E+02
A = 0.60	L = 4	N = 19	ROOT = 1.4150133292513E+02
A = 0.60	L = 4	N = 20	ROOT = 1.4934849193647E+02
A = 0.60	L = 4	N = 21	ROOT = 1.5719633296439E+02
A = 0.60	L = 4	N = 22	ROOT = 1.6504475862151E+02
A = 0.60	L = 4	N = 23	ROOT = 1.7289368921735E+02
A = 0.60	L = 4	N = 24	ROOT = 1.8074305891517E+02
A = 0.60	L = 4	N = 25	ROOT = 1.8859281284561E+02
A = 0.60	L = 4	N = 26	ROOT = 1.9644290491500E+02
A = 0.60	L = 4	N = 27	ROOT = 2.0429329611873E+02
A = 0.63	L = 4	N = 28	ROOT = 2.1214395322824E+02
A = 0.60	L = 4	N = 29	ROOT = 2.1999484776071E+02
H = 0.60	L = 4	N = 30	ROOT = 2.2784595516078E+02

ROOTS OF EQUATION 3

						ROOT
A = 0.60	L = 5	N = 1	ROOT = 6.5973033957449E+00
A = 0.60	L = 5	N = 2	ROOT = 1.0901207570126E+01
A = 0.60	L = 5	N = 3	ROOT = 1.7360730905185E+01
A = 0.60	L = 5	N = 4	ROOT = 2.4681806327863E+01
A = 0.60	L = 5	N = 5	ROOT = 3.2259546034841E+01
A = 0.60	L = 5	N = 6	ROOT = 3.9946256294465E+01
A = 0.60	L = 5	N = 7	ROOT = 4.7688108712040E+01
A = 0.60	L = 5	N = 8	ROOT = 5.5461910793606E+01
A = 0.60	L = 5	N = 9	ROOT = 6.3255590052259E+01
A = 0.60	L = 5	N = 10	ROOT = 7.1062615243965E+01
A = 0.60	L = 5	N = 11	ROOT = 7.8878994491235E+01
A = 0.60	L = 5	N = 12	ROOT = 8.6702200732090E+01
A = 0.60	L = 5	N = 13	ROOT = 9.4530520187222E+01
A = 0.60	L = 5	N = 14	ROOT = 1.0236277993267E+02
A = 0.60	L = 5	N = 15	ROOT = 1.1019813758336E+02
A = 0.60	L = 5	N = 16	ROOT = 1.1803597400519E+02
A = 0.60	L = 5	N = 17	ROOT = 1.2587582249664E+02
A = 0.60	L = 5	N = 18	ROOT = 1.3371734053838E+02
A = 0.60	L = 5	N = 19	ROOT = 1.4156023758666E+02
A = 0.60	L = 5	N = 20	ROOT = 1.4940430038332E+02
A = 0.60	L = 5	N = 21	ROOT = 1.5724935425985E+02
A = 0.60	L = 5	N = 22	ROOT = 1.6509525777524E+02
A = 0.60	L = 5	N = 23	ROOT = 1.7294189517508E+02
A = 0.60	L = 5	N = 24	ROOT = 1.8078917081400E+02
A = 0.60	L = 5	N = 25	ROOT = 1.8863700497512E+02
A = 0.60	L = 5	N = 26	ROOT = 1.9648533068043E+02
A = 0.60	L = 5	N = 27	ROOT = 2.0433409125061E+02
A = 0.60	L = 5	N = 28	ROOT = 2.1218323839621E+02
A = 0.60	L = 5	N = 29	ROOT = 2.2003273072139E+02
A = 0.60	L = 5	N = 30	ROOT = 2.2788253253634E+02

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    ROOTS OF EQUATION 3

A =	0.60	L =	6	N =	1	ROOT = 7.7391115319673E+00
A =	0.60	L =	6	N =	2	ROOT = 1.1976319813171E+01
A =	0.60	L =	6	N =	3	ROOT = 1.7960008411155E+01
A =	0.60	L =	6	N =	4	ROOT = 2.5090953343101E+01
A =	0.60	L =	6	N =	5	ROOT = 3.2571079902401E+01
A =	0.60	L =	6	N =	6	ROOT = 4.8197349524108E+01
A =	0.60	L =	6	N =	7	ROOT = 4.7898310480773E+01
A =	0.60	L =	6	N =	8	ROOT = 5.5642478554264E+01
A =	0.60	L =	6	N =	9	ROOT = 6.3413854376781E+01
A =	0.60	L =	6	N =	10	ROOT = 7.1203485794954BE+01
A =	0.60	L =	6	N =	11	ROOT = 7.9005864178570E+01
A =	0.60	L =	6	N =	12	ROOT = 8.6817684060010E+01
A =	0.60	L =	6	N =	13	ROOT = 9.4636356796917E+01
A =	0.60	L =	6	N =	14	ROOT = 1.0246051144013E+02
A =	0.60	L =	6	N =	15	ROOT = 1.1028091497759E+02
A =	0.60	L =	6	N =	16	ROOT = 1.1812072051703E+02
A =	0.60	L =	6	N =	17	ROOT = 1.2595529207007E+02
A =	0.60	L =	6	N =	18	ROOT = 1.3379214281806E+02
A =	0.60	L =	6	N =	19	ROOT = 1.4163089375793E+02
A =	0.60	L =	6	N =	20	ROOT = 1.4947124549053E+02
A =	0.60	L =	6	N =	21	ROOT = 1.5731295834646E+02
A =	0.60	L =	6	N =	22	ROOT = 1.6515503828286SE+02
A =	0.60	L =	6	N =	23	ROOT = 1.7299972618465E+02
A =	0.60	L =	6	N =	24	ROOT = 1.8084449096589E+02
A =	0.60	L =	6	N =	25	ROOT = 1.8869002309266E+02
A =	0.60	L =	6	N =	26	ROOT = 1.9653623059237E+02
A =	0.60	L =	6	N =	27	ROOT = 2.0438303562239E+02
A =	0.60	L =	6	N =	28	ROOT = 2.1223037185749E+02
A =	0.60	L =	6	N =	29	ROOT = 2.2007818243620E+02
A =	0.60	L =	6	N =	30	ROOT = 2.2792641833127E+02

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    ROOTS OF EQUATION 3

A =	0.60	L =	7	N =	1	ROOT = 8.8508180932904E+00
A =	0.60	L =	7	N =	2	ROOT = 1.3047732685681E+01
A =	0.60	L =	7	N =	3	ROOT = 1.8630925329909E+01
A =	0.60	L =	7	N =	4	ROOT = 2.5561197565267E+01
A =	0.60	L =	7	N =	5	ROOT = 3.2931252595236E+01
A =	0.60	L =	7	N =	6	ROOT = 4.0408534994019E+01
A =	0.60	L =	7	N =	7	ROOT = 4.8142411209513E+01
A =	0.60	L =	7	N =	8	ROOT = 5.5852475544135E+01
A =	0.60	L =	7	N =	9	ROOT = 6.3598045141936E+01
A =	0.60	L =	7	N =	10	ROOT = 7.1367456314052E+01
A =	0.60	L =	7	N =	11	ROOT = 7.9153639983147E+01
A =	0.60	L =	7	N =	12	ROOT = 8.6952066616545E+01
A =	0.60	L =	7	N =	13	ROOT = 9.4759697182284E+01
A =	0.60	L =	7	N =	14	ROOT = 1.0257442461303E+02
A =	0.60	L =	7	N =	15	ROOT = 1.1039473619350E+02
A =	0.60	L =	7	N =	16	ROOT = 1.1821952070962E+02
A =	0.60	L =	7	N =	17	ROOT = 1.2604794317744E+02
A =	0.60	L =	7	N =	18	ROOT = 1.3387936409766E+02
A =	0.60	L =	7	N =	19	ROOT = 1.4171320545200E+02
A =	0.60	L =	7	N =	20	ROOT = 1.4954931365305E+02
A =	0.60	L =	7	N =	21	ROOT = 1.5738713355089E+02
A =	0.60	L =	7	N =	22	ROOT = 1.6522648983125E+02
A =	0.60	L =	7	N =	23	ROOT = 1.7306717346525E+02
A =	0.60	L =	7	N =	24	ROOT = 1.8090901168017E+02
A =	0.60	L =	7	N =	25	ROOT = 1.8875186842865E+02
A =	0.60	L =	7	N =	26	ROOT = 1.9659559865936E+02
A =	0.60	L =	7	N =	27	ROOT = 2.0440012390581E+02
A =	0.60	L =	7	N =	28	ROOT = 2.1228534085200E+02
A =	0.60	L =	7	N =	29	ROOT = 2.2013119863665E+02
A =	0.60	L =	7	N =	30	ROOT = 2.2797768078270E+02

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ROOTS OF EQUATION 3

A = 0.60	L = 8	N = 1	ROOT = 9.960180840554E+00
A = 0.60	L = 8	N = 2	ROOT = 1.417461921198E+01
A = 0.60	L = 8	N = 3	ROOT = 1.937552992522E+01
A = 0.60	L = 8	N = 4	ROOT = 2.608981136938E+01
A = 0.60	L = 8	N = 5	ROOT = 3.333869652506E+01
A = 0.60	L = 8	N = 6	ROOT = 4.081905349018E+01
A = 0.60	L = 8	N = 7	ROOT = 4.842003171573E+01
A = 0.60	L = 8	N = 8	ROOT = 5.609160470305E+01
A = 0.60	L = 8	N = 9	ROOT = 6.380796071526E+01
A = 0.60	L = 8	N = 10	ROOT = 7.155446646311E+01
A = 0.60	L = 8	N = 11	ROOT = 7.932222112157E+01
A = 0.60	L = 8	N = 12	ROOT = 8.710550420706E+01
A = 0.60	L = 8	N = 13	ROOT = 9.490047944250E+01
A = 0.60	L = 8	N = 14	ROOT = 1.027044705848E+02
A = 0.60	L = 8	N = 15	ROOT = 1.105155619877E+02
A = 0.60	L = 8	N = 16	ROOT = 1.183323434022E+02
A = 0.60	L = 8	N = 17	ROOT = 1.261537543901E+02
A = 0.60	L = 8	N = 18	ROOT = 1.339789823277E+02
A = 0.60	L = 8	N = 19	ROOT = 1.418073940686E+02
A = 0.60	L = 8	N = 20	ROOT = 1.496384903744E+02
A = 0.60	L = 8	N = 21	ROOT = 1.574718662846E+02
A = 0.60	L = 8	N = 22	ROOT = 1.653072008947E+02
A = 0.60	L = 8	N = 23	ROOT = 1.731442679144E+02
A = 0.60	L = 8	N = 24	ROOT = 1.809827240030E+02
A = 0.60	L = 8	N = 25	ROOT = 1.888225090974E+02
A = 0.60	L = 8	N = 26	ROOT = 1.966634279012E+02
A = 0.60	L = 8	N = 27	ROOT = 2.045053498927E+02
A = 0.60	L = 8	N = 28	ROOT = 2.123481638364E+02
A = 0.60	L = 8	N = 29	ROOT = 2.201917434051E+02
A = 0.60	L = 8	N = 30	ROOT = 2.280360991720E+02

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ROOTS OF EQUATION 3

A = 0.60	L = 9	N = 1	ROOT = 1.104699673189E+01
A = 0.60	L = 9	N = 2	ROOT = 1.533934638341E+01
A = 0.60	L = 9	N = 3	ROOT = 2.018027349544E+01
A = 0.60	L = 9	N = 4	ROOT = 2.667400062505E+01
A = 0.60	L = 9	N = 5	ROOT = 3.379194313779E+01
A = 0.60	L = 9	N = 6	ROOT = 4.118807150091E+01
A = 0.60	L = 9	N = 7	ROOT = 4.873066617403E+01
A = 0.60	L = 9	N = 8	ROOT = 5.635953381891E+01
A = 0.60	L = 9	N = 9	ROOT = 6.404337339357E+01
A = 0.60	L = 9	N = 10	ROOT = 7.176432602052E+01
A = 0.60	L = 9	N = 11	ROOT = 7.951148792689E+01
A = 0.60	L = 9	N = 12	ROOT = 8.727832037420E+01
A = 0.60	L = 9	N = 13	ROOT = 9.505863334793E+01
A = 0.60	L = 9	N = 14	ROOT = 1.028505938404E+02
A = 0.60	L = 9	N = 15	ROOT = 1.106513477457E+02
A = 0.60	L = 9	N = 16	ROOT = 1.184591522033E+02
A = 0.60	L = 9	N = 17	ROOT = 1.262726956807E+02
A = 0.60	L = 9	N = 18	ROOT = 1.340909723909E+02
A = 0.60	L = 9	N = 19	ROOT = 1.419131984176E+02
A = 0.60	L = 9	N = 20	ROOT = 1.497387535997E+02
A = 0.60	L = 9	N = 21	ROOT = 1.575671410576E+02
A = 0.60	L = 9	N = 22	ROOT = 1.653979950039E+02
A = 0.60	L = 9	N = 23	ROOT = 1.732308745018E+02
A = 0.60	L = 9	N = 24	ROOT = 1.810656172206E+02
A = 0.60	L = 9	N = 25	ROOT = 1.889019601028E+02
A = 0.60	L = 9	N = 26	ROOT = 1.967397103536E+02
A = 0.60	L = 9	N = 27	ROOT = 2.045787064491E+02
A = 0.60	L = 9	N = 28	ROOT = 2.124188104793E+02
A = 0.60	L = 9	N = 29	ROOT = 2.202599038944E+02
A = 0.60	L = 9	N = 30	ROOT = 2.281018846270E+02

ROOTS OF EQUATION 3

									ROOT
A =	0.60	L =	10	N =	1		ROOT =	1.2122610009053E+01
A =	0.60	L =	10	N =	2		ROOT =	1.6527342002606E+01
A =	0.60	L =	10	N =	3		ROOT =	2.1064849044517E+01
A =	0.60	L =	10	N =	4		ROOT =	2.7310984796287E+01
A =	0.60	L =	10	N =	5		ROOT =	3.4289451673865E+01
A =	0.60	L =	10	N =	6		ROOT =	4.1594626809171E+01
A =	0.60	L =	10	N =	7		ROOT =	4.9073745068972E+01
A =	0.60	L =	10	N =	8		ROOT =	5.6655897261411E+01
A =	0.60	L =	10	N =	9		ROOT =	6.4304031561598E+01
A =	0.60	L =	10	N =	10		ROOT =	7.1996854893344E+01
A =	0.60	L =	10	N =	11		ROOT =	7.9721307317681E+01
A =	0.60	L =	10	N =	12		ROOT =	8.7460946870433E+01
A =	0.60	L =	10	N =	13		ROOT =	9.5234000468504E+01
A =	0.60	L =	10	N =	14		ROOT =	1.0301273235558E+02
A =	0.60	L =	10	N =	15		ROOT =	1.1080204356752E+02
A =	0.60	L =	10	N =	16		ROOT =	1.1859990639579E+02
A =	0.60	L =	10	N =	17		ROOT =	1.2640473332725E+02
A =	0.60	L =	10	N =	18		ROOT =	1.3421530617330E+02
A =	0.60	L =	10	N =	19		ROOT =	1.4203067474542E+02
A =	0.60	L =	10	N =	20		ROOT =	1.4985080710967E+02
A =	0.60	L =	10	N =	21		ROOT =	1.5767294049434E+02
A =	0.60	L =	10	N =	22		ROOT =	1.6549874612865E+02
A =	0.60	L =	10	N =	23		ROOT =	1.7332710358075E+02
A =	0.60	L =	10	N =	24		ROOT =	1.8115768136758E+02
A =	0.60	L =	10	N =	25		ROOT =	1.8899020334481E+02
A =	0.60	L =	10	N =	26		ROOT =	1.9682443707364E+02
A =	0.60	L =	10	N =	27		ROOT =	2.0466018576894E+02
A =	0.60	L =	10	N =	28		ROOT =	2.1249728167284E+02
A =	0.60	L =	10	N =	29		ROOT =	2.2033558089673E+02
A =	0.60	L =	10	N =	30		ROOT =	2.2817495932463E+02

ROOTS OF EQUATION 3

									ROOT
A =	0.60	L =	11	N =	1		ROOT =	1.3109711006054E+01
A =	0.60	L =	11	N =	2		ROOT =	1.7726058569287E+01
A =	0.60	L =	11	N =	3		ROOT =	2.1998090524515E+01
A =	0.60	L =	11	N =	4		ROOT =	2.7999067479392E+01
A =	0.60	L =	11	N =	5		ROOT =	3.4829637284295E+01
A =	0.60	L =	11	N =	6		ROOT =	4.2037969510374E+01
A =	0.60	L =	11	N =	7		ROOT =	4.9486069491524E+01
A =	0.60	L =	11	N =	8		ROOT =	5.6980299491524E+01
A =	0.60	L =	11	N =	9		ROOT =	6.4589661161112E+01
A =	0.60	L =	11	N =	10		ROOT =	7.2251056115318E+01
A =	0.60	L =	11	N =	11		ROOT =	7.9951533312546E+01
A =	0.60	L =	11	N =	12		ROOT =	8.7678736489270E+01
A =	0.60	L =	11	N =	13		ROOT =	9.5426734519547E+01
A =	0.60	L =	11	N =	14		ROOT =	1.0319081773799E+02
A =	0.60	L =	11	N =	15		ROOT =	1.1096752438052E+02
A =	0.60	L =	11	N =	16		ROOT =	1.1875456098925E+02
A =	0.60	L =	11	N =	17		ROOT =	1.2654983018038E+02
A =	0.60	L =	11	N =	18		ROOT =	1.3435195253154E+02
A =	0.60	L =	11	N =	19		ROOT =	1.4215979676455E+02
A =	0.60	L =	11	N =	20		ROOT =	1.4997246715352E+02
A =	0.60	L =	11	N =	21		ROOT =	1.5778924535108E+02
A =	0.60	L =	11	N =	22		ROOT =	1.6560954861797E+02
A =	0.60	L =	11	N =	23		ROOT =	1.7343289930946E+02
A =	0.60	L =	11	N =	24		ROOT =	1.8125890223569E+02
A =	0.60	L =	11	N =	25		ROOT =	1.8908722762606E+02
A =	0.60	L =	11	N =	26		ROOT =	1.9691759814500E+02
A =	0.60	L =	11	N =	27		ROOT =	2.0474977887912E+02
A =	0.60	L =	11	N =	28		ROOT =	2.1258356953227E+02
A =	0.60	L =	11	N =	29		ROOT =	2.2041879828106E+02
A =	0.60	L =	11	N =	30		ROOT =	2.2825531689324E+02

ROOTS OF EQUATION 3

A =	0.60	L =	12	N =	1	ROOT = 1.4250331770038E+01
A =	0.60	L =	12	N =	2	ROOT = 1.8928691837206E+01
A =	0.60	L =	12	N =	3	ROOT = 2.2985747958202E+01
A =	0.60	L =	12	N =	4	ROOT = 2.8732695768379E+01
A =	0.60	L =	12	N =	5	ROOT = 3.5410897069384E+01
A =	0.60	L =	12	N =	6	ROOT = 4.2516915005492E+01
A =	0.60	L =	12	N =	7	ROOT = 4.9054849472661E+01
A =	0.60	L =	12	N =	8	ROOT = 5.7332317507142E+01
A =	0.60	L =	12	N =	9	ROOT = 6.4899967253612E+01
A =	0.60	L =	12	N =	10	ROOT = 7.2529116756990E+01
A =	0.60	L =	12	N =	11	ROOT = 8.0202007585824E+01
A =	0.60	L =	12	N =	12	ROOT = 8.7987080983105E+01
A =	0.60	L =	12	N =	13	ROOT = 9.5636501464017E+01
A =	0.60	L =	12	N =	14	ROOT = 1.0338477538759E+02
A =	0.60	L =	12	N =	15	ROOT = 1.1114794003916E+02
A =	0.60	L =	12	N =	16	ROOT = 1.1892306680957E+02
A =	0.60	L =	12	N =	17	ROOT = 1.2670794551500E+02
A =	0.60	L =	12	N =	18	ROOT = 1.3450087740790E+02
A =	0.60	L =	12	N =	19	ROOT = 1.4230053568633E+02
A =	0.60	L =	12	N =	20	ROOT = 1.5010586919893E+02
A =	0.60	L =	12	N =	21	ROOT = 1.5791603453549E+02
A =	0.60	L =	12	N =	22	ROOT = 1.6573034721532E+02
A =	0.60	L =	12	N =	23	ROOT = 1.7354824599806E+02
A =	0.60	L =	12	N =	24	ROOT = 1.8136926383399E+02
A =	0.60	L =	12	N =	25	ROOT = 1.8919302066844E+02
A =	0.60	L =	12	N =	26	ROOT = 1.9701918268502E+02
A =	0.60	L =	12	N =	27	ROOT = 2.0484747614502E+02
A =	0.60	L =	12	N =	28	ROOT = 2.1267766540172E+02
A =	0.60	L =	12	N =	29	ROOT = 2.2050954827972E+02
A =	0.60	L =	12	N =	30	ROOT = 2.2834295033620E+02

ROOTS OF EQUATION 3

A =	0.60	L =	13	N =	1	ROOT = 1.5305959920358E+01
A =	0.60	L =	13	N =	2	ROOT = 2.0125984703005E+01
A =	0.60	L =	13	N =	3	ROOT = 2.4022106653330E+01
A =	0.60	L =	13	N =	4	ROOT = 2.9512507107976E+01
A =	0.60	L =	13	N =	5	ROOT = 3.6031639207270E+01
A =	0.60	L =	13	N =	6	ROOT = 4.3030514275076E+01
A =	0.60	L =	13	N =	7	ROOT = 5.0291577533208E+01
A =	0.60	L =	13	N =	8	ROOT = 5.7715036659162E+01
A =	0.60	L =	13	N =	9	ROOT = 6.5234635658695E+01
A =	0.60	L =	13	N =	10	ROOT = 7.2828408808383E+01
A =	0.60	L =	13	N =	11	ROOT = 8.0472560600013E+01
A =	0.60	L =	13	N =	12	ROOT = 8.8153850340550E+01
A =	0.60	L =	13	N =	13	ROOT = 9.5863279829601E+01
A =	0.60	L =	13	N =	14	ROOT = 1.0359452466789E+02
A =	0.60	L =	13	N =	15	ROOT = 1.1134301545089E+02
A =	0.60	L =	13	N =	16	ROOT = 1.1910537058305E+02
A =	0.60	L =	13	N =	17	ROOT = 1.2687903519645E+02
A =	0.60	L =	13	N =	18	ROOT = 1.3466204384126E+02
A =	0.60	L =	13	N =	19	ROOT = 1.4245206025631E+02
A =	0.60	L =	13	N =	20	ROOT = 1.5025026650218E+02
A =	0.60	L =	13	N =	21	ROOT = 1.5805320512780E+02
A =	0.60	L =	13	N =	22	ROOT = 1.6586112207516E+02
A =	0.60	L =	13	N =	23	ROOT = 1.7367312627890E+02
A =	0.60	L =	13	N =	24	ROOT = 1.8148875864915E+02
A =	0.60	L =	13	N =	25	ROOT = 1.8930756900132E+02
A =	0.60	L =	13	N =	26	ROOT = 1.9712917005147E+02
A =	0.60	L =	13	N =	27	ROOT = 2.0495326702605E+02
A =	0.60	L =	13	N =	28	ROOT = 2.1277959905060E+02
A =	0.60	L =	13	N =	29	ROOT = 2.2060782243590E+02
A =	0.60	L =	13	N =	30	ROOT = 2.2843785203507E+02

ROOTS OF EQUATION 3

							ROOT
A = 0.60	L = 14	N = 1	ROOT = 1.635766299728?E+01
A = 0.60	L = 14	N = 2	ROOT = 2.131406296803E+01
A = 0.60	L = 14	N = 3	ROOT = 2.510209755549E+01
A = 0.60	L = 14	N = 4	ROOT = 3.033536183196E+01
A = 0.60	L = 14	N = 5	ROOT = 3.669029812907E+01
A = 0.60	L = 14	N = 6	ROOT = 4.357773562950E+01
A = 0.60	L = 14	N = 7	ROOT = 5.075018411036E+01
A = 0.60	L = 14	N = 8	ROOT = 5.811738968766E+01
A = 0.60	L = 14	N = 9	ROOT = 6.559333465044E+01
A = 0.60	L = 14	N = 10	ROOT = 7.314949058624E+01
A = 0.60	L = 14	N = 11	ROOT = 8.076300953042E+01
A = 0.60	L = 14	N = 12	ROOT = 8.841090565116E+01
A = 0.60	L = 14	N = 13	ROOT = 9.610696096336E+01
A = 0.60	L = 14	N = 14	ROOT = 1.038199790894E+02
A = 0.60	L = 14	N = 15	ROOT = 1.115527507038E+02
A = 0.60	L = 14	N = 16	ROOT = 1.193014150289E+02
A = 0.60	L = 14	N = 17	ROOT = 1.270630517276E+02
A = 0.60	L = 14	N = 18	ROOT = 1.348354120240E+02
A = 0.60	L = 14	N = 19	ROOT = 1.426167367926E+02
A = 0.60	L = 14	N = 20	ROOT = 1.504056305576E+02
A = 0.60	L = 14	N = 21	ROOT = 1.582009724036E+02
A = 0.60	L = 14	N = 22	ROOT = 1.660018517818E+02
A = 0.60	L = 14	N = 23	ROOT = 1.738075214008E+02
A = 0.60	L = 14	N = 24	ROOT = 1.816173626571E+02
A = 0.60	L = 14	N = 25	ROOT = 1.894308584518E+02
A = 0.60	L = 14	N = 26	ROOT = 1.972475738503E+02
A = 0.60	L = 14	N = 27	ROOT = 2.050671401320E+02
A = 0.60	L = 14	N = 28	ROOT = 2.128892427193E+02
A = 0.60	L = 14	N = 29	ROOT = 2.207136116080E+02
A = 0.60	L = 14	N = 30	ROOT = 2.285400137532E+02

ROOTS OF EQUATION 3

							ROOT
A = 0.60	L = 15	N = 1	ROOT = 1.740620483336E+01
A = 0.60	L = 15	N = 2	ROOT = 2.249023651462E+01
A = 0.60	L = 15	N = 3	ROOT = 2.621952430649E+01
A = 0.60	L = 15	N = 4	ROOT = 3.119935029872E+01
A = 0.60	L = 15	N = 5	ROOT = 3.738536365675E+01
A = 0.60	L = 15	N = 6	ROOT = 4.415754123187E+01
A = 0.60	L = 15	N = 7	ROOT = 5.125396597249E+01
A = 0.60	L = 15	N = 8	ROOT = 5.854948768096E+01
A = 0.60	L = 15	N = 9	ROOT = 6.597571669449E+01
A = 0.60	L = 15	N = 10	ROOT = 7.349210697707E+01
A = 0.60	L = 15	N = 11	ROOT = 8.107316431736E+01
A = 0.60	L = 15	N = 12	ROOT = 8.870209952091E+01
A = 0.60	L = 15	N = 13	ROOT = 9.636742931441E+01
A = 0.60	L = 15	N = 14	ROOT = 1.040610465043E+02
A = 0.60	L = 15	N = 15	ROOT = 1.117707120394E+02
A = 0.60	L = 15	N = 16	ROOT = 1.195111389586E+02
A = 0.60	L = 15	N = 17	ROOT = 1.272599443217E+02
A = 0.60	L = 15	N = 18	ROOT = 1.350209393603E+02
A = 0.60	L = 15	N = 19	ROOT = 1.427921292269E+02
A = 0.60	L = 15	N = 20	ROOT = 1.505719303254E+02
A = 0.60	L = 15	N = 21	ROOT = 1.583590690586E+02
A = 0.60	L = 15	N = 22	ROOT = 1.661525133648E+02
A = 0.60	L = 15	N = 23	ROOT = 1.739514115727E+02
A = 0.60	L = 15	N = 24	ROOT = 1.817550608355E+02
A = 0.60	L = 15	N = 25	ROOT = 1.895628732708E+02
A = 0.60	L = 15	N = 26	ROOT = 1.973743539435E+02
A = 0.60	L = 15	N = 27	ROOT = 2.051890032300E+02
A = 0.60	L = 15	N = 28	ROOT = 2.130067030441E+02
A = 0.60	L = 15	N = 29	ROOT = 2.208269059743E+02
A = 0.60	L = 15	N = 30	ROOT = 2.286494266399E+02

ROOTS OF EQUATION 3

A =	0.70	L =	1	N =	1	ROOT =	1.6543681780166E+00
A =	0.70	L =	1	N =	2	ROOT =	1.0744564491242E+01
A =	0.70	L =	1	N =	3	ROOT =	2.1000380909571E+01
A =	0.70	L =	1	N =	4	ROOT =	3.1506881011650E+01
A =	0.70	L =	1	N =	5	ROOT =	4.1956115475683E+01
A =	0.70	L =	1	N =	6	ROOT =	5.2414447211112E+01
A =	0.70	L =	1	N =	7	ROOT =	6.2877327244641E+01
A =	0.70	L =	1	N =	8	ROOT =	7.3342806156386E+01
A =	0.70	L =	1	N =	9	ROOT =	8.3809909302769E+01
A =	0.70	L =	1	N =	10	ROOT =	9.4278095242503E+01
A =	0.70	L =	1	N =	11	ROOT =	1.0474703912273E+02
A =	0.70	L =	1	N =	12	ROOT =	1.1521653422447E+02
A =	0.70	L =	1	N =	13	ROOT =	1.2568644273708E+02
A =	0.70	L =	1	N =	14	ROOT =	1.3615666925760E+02
A =	0.70	L =	1	N =	15	ROOT =	1.4662714563779E+02
A =	0.70	L =	1	N =	16	ROOT =	1.5709782190530E+02
A =	0.70	L =	1	N =	17	ROOT =	1.6756860058050E+02
A =	0.70	L =	1	N =	18	ROOT =	1.7803963380296E+02
A =	0.70	L =	1	N =	19	ROOT =	1.8851071680093E+02
A =	0.70	L =	1	N =	20	ROOT =	1.9898189461601E+02
A =	0.70	L =	1	N =	21	ROOT =	2.0945315212947E+02
A =	0.70	L =	1	N =	22	ROOT =	2.1992447802428E+02
A =	0.70	L =	1	N =	23	ROOT =	2.3039586297562E+02
A =	0.70	L =	1	N =	24	ROOT =	2.4086729928039E+02
A =	0.70	L =	1	N =	25	ROOT =	2.5133878051936E+02
A =	0.70	L =	1	N =	26	ROOT =	2.6181030130039E+02
A =	0.70	L =	1	N =	27	ROOT =	2.7228105706091E+02
A =	0.70	L =	1	N =	28	ROOT =	2.8275344391427E+02
A =	0.70	L =	1	N =	29	ROOT =	2.9322505852900E+02
H =	0.70	L =	1	N =	30	PCOT =	3.0369669803345E+02

ROOTS OF EQUATION 3

A =	0.70	L =	2	N =	1	ROOT =	2.8625462459961E+00
A =	0.70	L =	2	N =	2	ROOT =	1.1019105759469E+01
A =	0.70	L =	2	N =	3	ROOT =	2.1217123072742E+01
A =	0.70	L =	2	N =	4	ROOT =	3.1597925295097E+01
A =	0.70	L =	2	N =	5	ROOT =	4.2024367061988E+01
A =	0.70	L =	2	N =	6	ROOT =	5.2469036460300E+01
A =	0.70	L =	2	N =	7	ROOT =	6.2922812777509E+01
A =	0.70	L =	2	N =	8	ROOT =	7.3381790089789E+01
A =	0.70	L =	2	N =	9	ROOT =	8.3844019309963E+01
A =	0.70	L =	2	N =	10	ROOT =	9.4308414250041E+01
A =	0.70	L =	2	N =	11	ROOT =	1.0477432558266E+02
A =	0.70	L =	2	N =	12	ROOT =	1.1524133966556E+02
A =	0.70	L =	2	N =	13	ROOT =	1.2570918075602E+02
A =	0.70	L =	2	N =	14	ROOT =	1.3617765797969E+02
A =	0.70	L =	2	N =	15	ROOT =	1.4664663500492E+02
A =	0.70	L =	2	N =	16	ROOT =	1.5711601186036E+02
A =	0.70	L =	2	N =	17	ROOT =	1.6758571357863E+02
A =	0.70	L =	2	N =	18	ROOT =	1.7805568200352E+02
A =	0.70	L =	2	N =	19	ROOT =	1.8852587496856E+02
A =	0.70	L =	2	N =	20	ROOT =	1.9899625406357E+02
A =	0.70	L =	2	N =	21	ROOT =	2.0946679432736E+02
A =	0.70	L =	2	N =	22	ROOT =	2.1993747056311E+02
A =	0.70	L =	2	N =	23	ROOT =	2.3040826491920E+02
A =	0.70	L =	2	N =	24	ROOT =	2.4087916198792E+02
A =	0.70	L =	2	N =	25	ROOT =	2.5135014892965E+02
A =	0.70	L =	2	N =	26	ROOT =	2.6182121495922E+02
A =	0.70	L =	2	N =	27	ROOT =	2.7229235095079E+02
A =	0.70	L =	2	N =	28	ROOT =	2.8276354913855E+02
A =	0.70	L =	2	N =	29	ROOT =	2.9323480283527E+02
A =	0.70	L =	2	N =	30	ROOT =	3.0370610632084E+02

ROOTS OF EQUATION 3

A = 0.70	L =	3	N =	1	ROOT = 4.842161003190BE+00
A = 0.70	L =	3	N =	2	ROOT = 1.1419888055293E+01
A = 0.70	L =	3	N =	3	ROOT = 2.1420703821658E+01
A = 0.70	L =	3	N =	4	ROOT = 3.1734829469305E+01
A = 0.70	L =	3	N =	5	ROOT = 4.2126547587402E+01
A = 0.70	L =	3	N =	6	ROOT = 5.2550819095660E+01
A = 0.70	L =	3	N =	7	ROOT = 6.2990982346400E+01
A = 0.70	L =	3	N =	8	ROOT = 7.3440230950327E+01
A = 0.70	L =	3	N =	9	ROOT = 8.3895159483183E+01
A = 0.70	L =	3	N =	10	ROOT = 9.4353875305560E+01
A = 0.70	L =	3	N =	11	ROOT = 1.0481524254773E+02
A = 0.70	L =	3	N =	12	ROOT = 1.1527853825860E+02
A = 0.70	L =	3	N =	13	ROOT = 1.2574328041101E+02
A = 0.70	L =	3	N =	14	ROOT = 1.3620913526316E+02
A = 0.70	L =	3	N =	15	ROOT = 1.4667586441131E+02
A = 0.70	L =	3	N =	16	ROOT = 1.5714329381646E+02
A = 0.70	L =	3	N =	17	ROOT = 1.6761128994362E+02
A = 0.70	L =	3	N =	18	ROOT = 1.7807975490956E+02
A = 0.70	L =	3	N =	19	ROOT = 1.8854860991393E+02
A = 0.70	L =	3	N =	20	ROOT = 1.9901779337605E+02
A = 0.70	L =	3	N =	21	ROOT = 2.0948725603034E+02
A = 0.70	L =	3	N =	22	ROOT = 2.1995695799440E+02
A = 0.70	L =	3	N =	23	ROOT = 2.3042686663699E+02
A = 0.70	L =	3	N =	24	ROOT = 2.4089695500110E+02
A = 0.70	L =	3	N =	25	ROOT = 2.5136720062256E+02
A = 0.70	L =	3	N =	26	ROOT = 2.6183758463125E+02
A = 0.70	L =	3	N =	27	ROOT = 2.7230809105999E+02
A = 0.70	L =	3	N =	28	ROOT = 2.8277870630701E+02
A = 0.70	L =	3	N =	29	ROOT = 2.9324941871357E+02
A = 0.70	L =	3	N =	30	ROOT = 3.0372021822099E+02

ROOTS OF EQUATION 3

A = 0.70	L =	4	N =	1	ROOT = 5.2081018927458E+00
A = 0.70	L =	4	N =	2	ROOT = 1.1935659097537E+01
A = 0.70	L =	4	N =	3	ROOT = 2.1689384480272E+01
A = 0.70	L =	4	N =	4	ROOT = 3.1914649993784E+01
A = 0.70	L =	4	N =	5	ROOT = 4.2262423514483E+01
A = 0.70	L =	4	N =	6	ROOT = 5.2659674517017E+01
A = 0.70	L =	4	N =	7	ROOT = 6.3081765832301E+01
A = 0.70	L =	4	N =	8	ROOT = 7.3510002056255E+01
A = 0.70	L =	4	N =	9	ROOT = 8.3963380102473E+01
A = 0.70	L =	4	N =	10	ROOT = 9.4414457509394E+01
A = 0.70	L =	4	N =	11	ROOT = 1.0486977476052E+02
A = 0.70	L =	4	N =	12	ROOT = 1.1532811853863E+02
A = 0.70	L =	4	N =	13	ROOT = 1.2578873286740E+02
A = 0.70	L =	4	N =	14	ROOT = 1.3625109415594E+02
A = 0.70	L =	4	N =	15	ROOT = 1.4671482028899E+02
A = 0.70	L =	4	N =	16	ROOT = 1.5717966084547E+02
A = 0.70	L =	4	N =	17	ROOT = 1.6764538596773E+02
A = 0.70	L =	4	N =	18	ROOT = 1.7811184620929E+02
A = 0.70	L =	4	N =	19	ROOT = 1.8857891909523E+02
A = 0.70	L =	4	N =	20	ROOT = 1.9904650792390E+02
A = 0.70	L =	4	N =	21	ROOT = 2.0951453532660E+02
A = 0.70	L =	4	N =	22	ROOT = 2.1998293866680E+02
A = 0.70	L =	4	N =	23	ROOT = 2.3045166666924E+02
A = 0.70	L =	4	N =	24	ROOT = 2.4092067786264E+02
A = 0.70	L =	4	N =	25	ROOT = 2.5138993449146E+02
A = 0.70	L =	4	N =	26	ROOT = 2.6185940933735E+02
A = 0.70	L =	4	N =	27	ROOT = 2.7232907651802E+02
A = 0.70	L =	4	N =	28	ROOT = 2.8279891466631E+02
A = 0.70	L =	4	N =	29	ROOT = 2.9326890546696E+02
A = 0.70	L =	4	N =	30	ROOT = 3.0373903313048E+02

ROOTS OF EQUATION 3

A =	0.70	L =	5	N =	1	ROOT =	6.3631849007589E+00
A =	0.70	L =	5	N =	2	ROOT =	1.2553967613253E+01
A =	0.70	L =	5	N =	3	ROOT =	2.2020967743362E+01
A =	0.70	L =	5	N =	4	ROOT =	3.2139080173900E+01
A =	0.70	L =	5	N =	5	ROOT =	4.2431687059707E+01
A =	0.70	L =	5	N =	6	ROOT =	5.2795443385015E+01
A =	0.70	L =	5	N =	7	ROOT =	6.3195070334248E+01
A =	0.70	L =	5	N =	8	ROOT =	7.3615285439863E+01
A =	0.70	L =	5	N =	9	ROOT =	8.4048401682457E+01
A =	0.70	L =	5	N =	10	ROOT =	9.4490133073846E+01
A =	0.70	L =	5	N =	11	ROOT =	1.0493790193718E+02
A =	0.70	L =	5	N =	12	ROOT =	1.1539006524790E+02
A =	0.70	L =	5	N =	13	ROOT =	1.2584552636330E+02
A =	0.70	L =	5	N =	14	ROOT =	1.3630352540114E+02
A =	0.70	L =	5	N =	15	ROOT =	1.4676351922267E+02
A =	0.70	L =	5	N =	16	ROOT =	1.5722510931605E+02
A =	0.70	L =	5	N =	17	ROOT =	1.6768799667162E+02
A =	0.70	L =	5	N =	18	ROOT =	1.7815195255696E+02
A =	0.70	L =	5	N =	19	ROOT =	1.8861679901917E+02
A =	0.70	L =	5	N =	20	ROOT =	1.9908239553633E+02
A =	0.70	L =	5	N =	21	ROOT =	2.0954862966808E+02
A =	0.70	L =	5	N =	22	ROOT =	2.2001541037911E+02
A =	0.70	L =	5	N =	23	ROOT =	2.3048266317103E+02
A =	0.70	L =	5	N =	24	ROOT =	2.4095032649689E+02
A =	0.70	L =	5	N =	25	ROOT =	2.5141834906139E+02
A =	0.70	L =	5	N =	26	ROOT =	2.6188668777247E+02
A =	0.70	L =	5	N =	27	ROOT =	2.7235530616460E+02
A =	0.70	L =	5	N =	28	ROOT =	2.8282417317231E+02
A =	0.70	L =	5	N =	29	ROOT =	2.9329326216632E+02
A =	0.70	L =	5	N =	30	ROOT =	3.0376255018903E+02

ROOTS OF EQUATION 3

A =	0.70	L =	6	N =	1	ROOT =	7.5078135337444E+00
A =	0.70	L =	6	N =	2	ROOT =	1.3262291139963E+01
A =	0.70	L =	6	N =	3	ROOT =	2.2412889384751E+01
A =	0.70	L =	6	N =	4	ROOT =	3.2406464513522E+01
A =	0.70	L =	6	N =	5	ROOT =	4.2633963810849E+01
A =	0.70	L =	6	N =	6	ROOT =	5.2957208839413E+01
A =	0.70	L =	6	N =	7	ROOT =	6.3330700666568E+01
A =	0.70	L =	6	N =	8	ROOT =	7.3731768079643E+01
A =	0.70	L =	6	N =	9	ROOT =	8.4150415092135E+01
A =	0.70	L =	6	N =	10	ROOT =	9.4580867389934E+01
A =	0.70	L =	6	N =	11	ROOT =	1.0501959879403E+02
A =	0.70	L =	6	N =	12	ROOT =	1.1546435936047E+02
A =	0.70	L =	6	N =	13	ROOT =	1.2591364622633E+02
A =	0.70	L =	6	N =	14	ROOT =	1.3636641744775E+02
A =	0.70	L =	6	N =	15	ROOT =	1.4682192795709E+02
A =	0.70	L =	6	N =	16	ROOT =	1.5727963089884E+02
A =	0.70	L =	6	N =	17	ROOT =	1.6773911584829E+02
A =	0.70	L =	6	N =	18	ROOT =	1.7820006877563E+02
A =	0.70	L =	6	N =	19	ROOT =	1.8866224532311E+02
A =	0.70	L =	6	N =	20	ROOT =	1.9912545250265E+02
A =	0.70	L =	6	N =	21	ROOT =	2.0958953507485E+02
A =	0.70	L =	6	N =	22	ROOT =	2.2005437038205E+02
A =	0.70	L =	6	N =	23	ROOT =	2.3051985368111E+02
A =	0.70	L =	6	N =	24	ROOT =	2.4098590121041E+02
A =	0.70	L =	6	N =	25	ROOT =	2.5145244248959E+02
A =	0.70	L =	6	N =	26	ROOT =	2.6191941830604E+02
A =	0.70	L =	6	N =	27	ROOT =	2.7238677855002E+02
A =	0.70	L =	6	N =	28	ROOT =	2.8285440053036E+02
A =	0.70	L =	6	N =	29	ROOT =	2.9332248765073E+02
A =	0.70	L =	6	N =	30	ROOT =	3.0379076835961E+02

ROOTS OF EQUATION 3

A = 0.70	L = 7	N = 1	ROOT = 8.6418252728603E+00
A = 0.70	L = 7	N = 2	ROOT = 1.4048763317529E+01
A = 0.70	L = 7	N = 3	ROOT = 2.2862319917726E+01
A = 0.70	L = 7	N = 4	ROOT = 3.2715815392024E+01
A = 0.70	L = 7	N = 5	ROOT = 4.2868009063479E+01
A = 0.70	L = 7	N = 6	ROOT = 5.3146897902338E+01
A = 0.70	L = 7	N = 7	ROOT = 6.3408759968955E+01
A = 0.70	L = 7	N = 8	ROOT = 7.3867442986544E+01
A = 0.70	L = 7	N = 9	ROOT = 8.4269201703052E+01
A = 0.70	L = 7	N = 10	ROOT = 9.4686619110132E+01
A = 0.70	L = 7	N = 11	ROOT = 1.0511483509922E+02
A = 0.70	L = 7	N = 12	ROOT = 1.1555097811275E+02
A = 0.70	L = 7	N = 13	ROOT = 1.2599307409340E+02
A = 0.70	L = 7	N = 14	ROOT = 1.3643975646396E+02
A = 0.70	L = 7	N = 15	ROOT = 1.4689004340632E+02
A = 0.70	L = 7	N = 16	ROOT = 1.5734321657305E+02
A = 0.70	L = 7	N = 17	ROOT = 1.6779073605973E+02
A = 0.70	L = 7	N = 18	ROOT = 1.7825610866069E+02
A = 0.70	L = 7	N = 19	ROOT = 1.8871525277769E+02
A = 0.70	L = 7	N = 20	ROOT = 1.9917567437530E+02
A = 0.70	L = 7	N = 21	ROOT = 2.0963735012956E+02
A = 0.70	L = 7	N = 22	ROOT = 2.2009981537908E+02
A = 0.70	L = 7	N = 23	ROOT = 2.3056323535478E+02
A = 0.70	L = 7	N = 24	ROOT = 2.4102739869282E+02
A = 0.70	L = 7	N = 25	ROOT = 2.5149221256615E+02
A = 0.70	L = 7	N = 26	ROOT = 2.6195759898255E+02
A = 0.70	L = 7	N = 27	ROOT = 2.7242349193555E+02
A = 0.70	L = 7	N = 28	ROOT = 2.8289898351876E+02
A = 0.70	L = 7	N = 29	ROOT = 2.9335658052771E+02
A = 0.70	L = 7	N = 30	ROOT = 3.0382368638873E+02

ROOTS OF EQUATION 3

A = 0.70	L = 8	N = 1	ROOT = 9.7650553276311E+00
A = 0.70	L = 8	N = 2	ROOT = 1.4902531744768E+01
A = 0.70	L = 8	N = 3	ROOT = 2.3366260085736E+01
A = 0.70	L = 8	N = 4	ROOT = 3.3066031383083E+01
A = 0.70	L = 8	N = 5	ROOT = 4.3135720769864E+01
A = 0.70	L = 8	N = 6	ROOT = 5.3362083600987E+01
A = 0.70	L = 8	N = 7	ROOT = 6.3668050422110E+01
A = 0.70	L = 8	N = 8	ROOT = 7.4022209541776E+01
A = 0.70	L = 8	N = 9	ROOT = 8.4404933564836E+01
A = 0.70	L = 8	N = 10	ROOT = 9.4807340246657E+01
A = 0.70	L = 8	N = 11	ROOT = 1.0522335757311E+02
A = 0.70	L = 8	N = 12	ROOT = 1.1564989504000E+02
A = 0.70	L = 8	N = 13	ROOT = 1.2608379193445E+02
A = 0.70	L = 8	N = 14	ROOT = 1.3652352625306E+02
A = 0.70	L = 8	N = 15	ROOT = 1.4696785266465E+02
A = 0.70	L = 8	N = 16	ROOT = 1.5741585583419E+02
A = 0.70	L = 8	N = 17	ROOT = 1.6786684864265E+02
A = 0.70	L = 8	N = 18	ROOT = 1.7832030498405E+02
A = 0.70	L = 8	N = 19	ROOT = 1.8877581528994E+02
A = 0.70	L = 8	N = 20	ROOT = 1.9923305597025E+02
A = 0.70	L = 8	N = 21	ROOT = 2.0969176798684E+02
A = 0.70	L = 8	N = 22	ROOT = 2.2015174152789E+02
A = 0.70	L = 8	N = 23	ROOT = 2.3061280484913E+02
A = 0.70	L = 8	N = 24	ROOT = 2.4107481601767E+02
A = 0.70	L = 8	N = 25	ROOT = 2.5153765671472E+02
A = 0.70	L = 8	N = 26	ROOT = 2.6200122752207E+02
A = 0.70	L = 8	N = 27	ROOT = 2.7246544429395E+02
A = 0.70	L = 8	N = 28	ROOT = 2.8293023533350E+02
A = 0.70	L = 8	N = 29	ROOT = 2.9339553917357E+02
A = 0.70	L = 8	N = 30	ROOT = 3.0396130201476E+02

ROOTS OF EQUATION 3

A =	0.70	L =	9	N =	1	ROOT =	1.0877547683564E+01
A =	0.70	L =	9	N =	2	ROOT =	1.5813856842464E+01
A =	0.70	L =	9	N =	3	ROOT =	2.3921630233153E+01
A =	0.70	L =	9	N =	4	ROOT =	3.3455916506295E+01
A =	0.70	L =	9	N =	5	ROOT =	4.3434140977934E+01
A =	0.70	L =	9	N =	6	ROOT =	5.3603106101719E+01
A =	0.70	L =	9	N =	7	ROOT =	6.3870074060554E+01
A =	0.70	L =	9	N =	8	ROOT =	7.4195953883204E+01
A =	0.70	L =	9	N =	9	ROOT =	8.4557293606910E+01
A =	0.70	L =	9	N =	10	ROOT =	9.4942976204771E+01
A =	0.70	L =	9	N =	11	ROOT =	1.0534570074577E+02
A =	0.70	L =	9	N =	12	ROOT =	1.1576100001846E+02
A =	0.70	L =	9	N =	13	ROOT =	1.2618577407905E+02
A =	0.70	L =	9	N =	14	ROOT =	1.3661770877193E+02
A =	0.70	L =	9	N =	15	ROOT =	1.4705534101947E+02
A =	0.70	L =	9	N =	16	ROOT =	1.5749753670323E+02
A =	0.70	L =	9	N =	17	ROOT =	1.6794344371504E+02
A =	0.70	L =	9	N =	18	ROOT =	1.7839240949899E+02
A =	0.70	L =	9	N =	19	ROOT =	1.8884392590702E+02
A =	0.70	L =	9	N =	20	ROOT =	1.9929759137182E+02
A =	0.70	L =	9	N =	21	ROOT =	2.0975300437155E+02
A =	0.70	L =	9	N =	22	ROOT =	2.2021014444221E+02
A =	0.70	L =	9	N =	23	ROOT =	2.3066855834753E+02
A =	0.70	L =	9	N =	24	ROOT =	2.4112814984355E+02
A =	0.70	L =	9	N =	25	ROOT =	2.5156877199342E+02
A =	0.70	L =	9	N =	26	ROOT =	2.6205030132104E+02
A =	0.70	L =	9	N =	27	ROOT =	2.7251263331004E+02
A =	0.70	L =	9	N =	28	ROOT =	2.8297567090037E+02
A =	0.70	L =	9	N =	29	ROOT =	2.9343936173382E+02
A =	0.70	L =	9	N =	30	ROOT =	3.0390361596819E+02

ROOTS OF EQUATION 3

A =	0.70	L =	10	N =	1	ROOT =	1.1979623406572E+01
A =	0.70	L =	10	N =	2	ROOT =	1.6774069305194E+01
A =	0.70	L =	10	N =	3	ROOT =	2.4525348726013E+01
A =	0.70	L =	10	N =	4	ROOT =	3.3084199775752E+01
A =	0.70	L =	10	N =	5	ROOT =	4.3763462437363E+01
A =	0.70	L =	10	N =	6	ROOT =	5.3869875624906E+01
A =	0.70	L =	10	N =	7	ROOT =	6.4094633673334E+01
A =	0.70	L =	10	N =	8	ROOT =	7.4388549333708E+01
A =	0.70	L =	10	N =	9	ROOT =	8.4726275865030E+01
A =	0.70	L =	10	N =	10	ROOT =	9.5093466310490E+01
A =	0.70	L =	10	N =	11	ROOT =	1.0548140545330E+02
A =	0.70	L =	10	N =	12	ROOT =	1.1588449931310E+02
A =	0.70	L =	10	N =	13	ROOT =	1.2629899952515E+02
A =	0.70	L =	10	N =	14	ROOT =	1.3672228315192E+02
A =	0.70	L =	10	N =	15	ROOT =	1.4715249196573E+02
A =	0.70	L =	10	N =	16	ROOT =	1.5758024573685E+02
A =	0.70	L =	10	N =	17	ROOT =	1.6802851018366E+02
A =	0.70	L =	10	N =	18	ROOT =	1.7847249294574E+02
A =	0.70	L =	10	N =	19	ROOT =	1.8891957682031E+02
A =	0.70	L =	10	N =	20	ROOT =	1.9936927393405E+02
A =	0.70	L =	10	N =	21	ROOT =	2.0982119358212E+02
A =	0.70	L =	10	N =	22	ROOT =	2.2027501919363E+02
A =	0.70	L =	10	N =	23	ROOT =	2.3073049156119E+02
A =	0.70	L =	10	N =	24	ROOT =	2.4118739641529E+02
A =	0.70	L =	10	N =	25	ROOT =	2.5164555509500E+02
A =	0.70	L =	10	N =	26	ROOT =	2.6210481745385E+02
A =	0.70	L =	10	N =	27	ROOT =	2.7256505638139E+02
A =	0.70	L =	10	N =	28	ROOT =	2.8302616356344E+02
A =	0.70	L =	10	N =	29	ROOT =	2.9348804612365E+02
A =	0.70	L =	10	N =	30	ROOT =	3.0395062397207E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.70	L = 11	N = 1	ROOT =	1.3071070498409E+01
A = 0.70	L = 11	N = 2	ROOT =	1.7775473506469E+01
A = 0.70	L = 11	N = 3	ROOT =	2.5174397104094E+01
A = 0.70	L = 11	N = 4	ROOT =	3.4349554412076E+01
A = 0.70	L = 11	N = 5	ROOT =	4.4123034647375E+01
A = 0.70	L = 11	N = 6	ROOT =	5.4161794300369E+01
A = 0.70	L = 11	N = 7	ROOT =	6.4339913782566E+01
A = 0.70	L = 11	N = 8	ROOT =	7.4599846090924E+01
A = 0.70	L = 11	N = 9	ROOT =	8.4911785731143E+01
A = 0.70	L = 11	N = 10	ROOT =	9.5258743152022E+01
A = 0.70	L = 11	N = 11	ROOT =	1.0563040050247E+02
A = 0.70	L = 11	N = 12	ROOT =	1.1602011563003E+02
A = 0.70	L = 11	N = 13	ROOT =	1.2642342659752E+02
A = 0.70	L = 11	N = 14	ROOT =	1.3683722672232E+02
A = 0.70	L = 11	N = 15	ROOT =	1.4725928722220E+02
A = 0.70	L = 11	N = 16	ROOT =	1.5768796803900E+02
A = 0.70	L = 11	N = 17	ROOT =	1.6812203575244E+02
A = 0.70	L = 11	N = 18	ROOT =	1.7856054505766E+02
A = 0.70	L = 11	N = 19	ROOT =	1.8900275937015E+02
A = 0.70	L = 11	N = 20	ROOT =	1.9944809620846E+02
A = 0.70	L = 11	N = 21	ROOT =	2.0989608929320E+02
A = 0.70	L = 11	N = 22	ROOT =	2.2034636031305E+02
A = 0.70	L = 11	N = 23	ROOT =	2.3079859973090E+02
A = 0.70	L = 11	N = 24	ROOT =	2.4125255156540E+02
A = 0.70	L = 11	N = 25	ROOT =	2.5170800235199E+02
A = 0.70	L = 11	N = 26	ROOT =	2.6216477226974E+02
A = 0.70	L = 11	N = 27	ROOT =	2.7262271061906E+02
A = 0.70	L = 11	N = 28	ROOT =	2.8308180674223E+02
A = 0.70	L = 11	N = 29	ROOT =	2.9354159002844E+02
A = 0.70	L = 11	N = 30	ROOT =	3.0400232472426E+02

ROOTS OF EQUATION 3

				ROOT
A = 0.70	L = 12	N = 1	ROOT =	1.4155087129638E+01
A = 0.70	L = 12	N = 2	ROOT =	1.8811246252613E+01
A = 0.70	L = 12	N = 3	ROOT =	2.5865071736563E+01
A = 0.70	L = 12	N = 4	ROOT =	3.4850616278911E+01
A = 0.70	L = 12	N = 5	ROOT =	4.4512170025666E+01
A = 0.70	L = 12	N = 6	ROOT =	5.4478550666463E+01
A = 0.70	L = 12	N = 7	ROOT =	6.4606481609242E+01
A = 0.70	L = 12	N = 8	ROOT =	7.4829725705259E+01
A = 0.70	L = 12	N = 9	ROOT =	8.5113720224963E+01
A = 0.70	L = 12	N = 10	ROOT =	9.5438733534200E+01
A = 0.70	L = 12	N = 11	ROOT =	1.0579271197357E+02
A = 0.70	L = 12	N = 12	ROOT =	1.1616780817882E+02
A = 0.70	L = 12	N = 13	ROOT =	1.2655903653044E+02
A = 0.70	L = 12	N = 14	ROOT =	1.3696251453600E+02
A = 0.70	L = 12	N = 15	ROOT =	1.4737570674936E+02
A = 0.70	L = 12	N = 16	ROOT =	1.5779660727369E+02
A = 0.70	L = 12	N = 17	ROOT =	1.6822400693172E+02
A = 0.70	L = 12	N = 18	ROOT =	1.7865655456813E+02
A = 0.70	L = 12	N = 19	ROOT =	1.8909346405030E+02
A = 0.70	L = 12	N = 20	ROOT =	1.9953405034008E+02
A = 0.70	L = 12	N = 21	ROOT =	2.0997776455806E+02
A = 0.70	L = 12	N = 22	ROOT =	2.2042416179706E+02
A = 0.70	L = 12	N = 23	ROOT =	2.3087287762090E+02
A = 0.70	L = 12	N = 24	ROOT =	2.4132361071555E+02
A = 0.70	L = 12	N = 25	ROOT =	2.5177610972993E+02
A = 0.70	L = 12	N = 26	ROOT =	2.6223016340105E+02
A = 0.70	L = 12	N = 27	ROOT =	2.7268559284844E+02
A = 0.70	L = 12	N = 28	ROOT =	2.8314224560068E+02
A = 0.70	L = 12	N = 29	ROOT =	2.9359999090430E+02
A = 0.70	L = 12	N = 30	ROOT =	3.0405871598809E+02

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ROOTS OF EQUATION 3

A =	0.70	L =	13	N =	1	ROOT =	1.5230202013213E+01
A =	0.70	L =	13	N =	2	ROOT =	1.9875347432900E+01
A =	0.70	L =	13	N =	3	ROOT =	2.6597020576199E+01
A =	0.70	L =	13	N =	4	ROOT =	3.5386001094247E+01
A =	0.70	L =	13	N =	5	ROOT =	4.4930150085730E+01
A =	0.70	L =	13	N =	6	ROOT =	5.4819762051932E+01
A =	0.70	L =	13	N =	7	ROOT =	6.4894008575375E+01
A =	0.70	L =	13	N =	8	ROOT =	7.5077993657393E+01
A =	0.70	L =	13	N =	9	ROOT =	8.5331960285509E+01
A =	0.70	L =	13	N =	10	ROOT =	9.5633358245150E+01
A =	0.70	L =	13	N =	11	ROOT =	1.0596828147090E+02
A =	0.70	L =	13	N =	12	ROOT =	1.1632777272795E+02
A =	0.70	L =	13	N =	13	ROOT =	1.2670579076067E+02
A =	0.70	L =	13	N =	14	ROOT =	1.3709811949791E+02
A =	0.70	L =	13	N =	15	ROOT =	1.4750172876892E+02
A =	0.70	L =	13	N =	16	ROOT =	1.5791438567879E+02
A =	0.70	L =	13	N =	17	ROOT =	1.6833440904839E+02
A =	0.70	L =	13	N =	18	ROOT =	1.7876050921800E+02
A =	0.70	L =	13	N =	19	ROOT =	1.8919168051701E+02
A =	0.70	L =	13	N =	20	ROOT =	1.9962712727967E+02
A =	0.70	L =	13	N =	21	ROOT =	2.1006621181585E+02
A =	0.70	L =	13	N =	22	ROOT =	2.2050841710259E+02
A =	0.70	L =	13	N =	23	ROOT =	2.3095331956104E+02
A =	0.70	L =	13	N =	24	ROOT =	2.4140056887827E+02
A =	0.70	L =	13	N =	25	ROOT =	2.5184987283673E+02
A =	0.70	L =	13	N =	26	ROOT =	2.6230090576029E+02
A =	0.70	L =	13	N =	27	ROOT =	2.7275369961014E+02
A =	0.70	L =	13	N =	28	ROOT =	2.8320783784814E+02
A =	0.70	L =	13	N =	29	ROOT =	2.9366324597878E+02
A =	0.70	L =	13	N =	30	ROOT =	3.0411979521486E+02

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ROOTS OF EQUATION 3

A =	0.70	L =	14	N =	1	ROOT =	1.6298197001697E+01
A =	0.70	L =	14	N =	2	ROOT =	2.0962445718886E+01
A =	0.70	L =	14	N =	3	ROOT =	2.7362608732091E+01
A =	0.70	L =	14	N =	4	ROOT =	3.5954320173131E+01
A =	0.70	L =	14	N =	5	ROOT =	4.5376231520936E+01
A =	0.70	L =	14	N =	6	ROOT =	5.5184977168472E+01
A =	0.70	L =	14	N =	7	ROOT =	6.5202470651408E+01
A =	0.70	L =	14	N =	8	ROOT =	7.5344487915655E+01
A =	0.70	L =	14	N =	9	ROOT =	8.5566411080009E+01
A =	0.70	L =	14	N =	10	ROOT =	9.5842532314205E+01
A =	0.70	L =	14	N =	11	ROOT =	1.0615704627057E+02
A =	0.70	L =	14	N =	12	ROOT =	1.1649972168093E+02
A =	0.70	L =	14	N =	13	ROOT =	1.2686365238129E+02
A =	0.70	L =	14	N =	14	ROOT =	1.3724401239463E+02
A =	0.70	L =	14	N =	15	ROOT =	1.4763732978490E+02
A =	0.70	L =	14	N =	16	ROOT =	1.5804104408125E+02
A =	0.70	L =	14	N =	17	ROOT =	1.6845322625689E+02
A =	0.70	L =	14	N =	18	ROOT =	1.7887239576384E+02
A =	0.70	L =	14	N =	19	ROOT =	1.8929739758039E+02
A =	0.70	L =	14	N =	20	ROOT =	1.9972731758454E+02
A =	0.70	L =	14	N =	21	ROOT =	2.1016142200732E+02
A =	0.70	L =	14	N =	22	ROOT =	2.2059919157770E+02
A =	0.70	L =	14	N =	23	ROOT =	2.3103991936099E+02
A =	0.70	L =	14	N =	24	ROOT =	2.4148342065878E+02
A =	0.70	L =	14	N =	25	ROOT =	2.5192920592015E+02
A =	0.70	L =	14	N =	26	ROOT =	2.6237723553737E+02
A =	0.70	L =	14	N =	27	ROOT =	2.7282702716101E+02
A =	0.70	L =	14	N =	28	ROOT =	2.8327845774014E+02
A =	0.70	L =	14	N =	29	ROOT =	2.9373135225147E+02
A =	0.70	L =	14	N =	30	ROOT =	3.0418555971849E+02

ROOTS OF EQUATION 3

A =	0.70	L =	13	N =	1	ROOT =	1.5238202013213E+01
A =	0.70	L =	13	N =	2	ROOT =	1.9875347432900E+01
A =	0.70	L =	13	N =	3	ROOT =	2.6597020576199E+01
A =	0.70	L =	13	N =	4	ROOT =	3.5306001894247E+01
A =	0.70	L =	13	N =	5	ROOT =	4.4930150005730E+01
A =	0.70	L =	13	N =	6	ROOT =	5.4819762051932E+01
A =	0.70	L =	13	N =	7	ROOT =	6.4894008575375E+01
A =	0.70	L =	13	N =	8	ROOT =	7.5077993657393E+01
A =	0.70	L =	13	N =	9	ROOT =	8.5331960285509E+01
A =	0.70	L =	13	N =	10	ROOT =	9.5633350245150E+01
A =	0.70	L =	13	N =	11	ROOT =	1.0596828147090E+02
A =	0.70	L =	13	N =	12	ROOT =	1.1632777272795E+02
A =	0.70	L =	13	N =	13	ROOT =	1.2670579076867E+02
A =	0.70	L =	13	N =	14	ROOT =	1.3709811949791E+02
A =	0.70	L =	13	N =	15	ROOT =	1.4750172876892E+02
A =	0.70	L =	13	N =	16	ROOT =	1.5791438567879E+02
A =	0.70	L =	13	N =	17	ROOT =	1.6833440904839E+02
A =	0.70	L =	13	N =	18	ROOT =	1.7876050921800E+02
A =	0.70	L =	13	N =	19	ROOT =	1.8919168051701E+02
A =	0.70	L =	13	N =	20	ROOT =	1.9962712727967E+02
A =	0.70	L =	13	N =	21	ROOT =	2.1006621181585E+02
A =	0.70	L =	13	N =	22	ROOT =	2.2050841710259E+02
A =	0.70	L =	13	N =	23	ROOT =	2.3095331956104E+02
A =	0.70	L =	13	N =	24	ROOT =	2.4140056847827E+02
A =	0.70	L =	13	N =	25	ROOT =	2.5184987283673E+02
A =	0.70	L =	13	N =	26	ROOT =	2.6230098576029E+02
A =	0.70	L =	13	N =	27	ROOT =	2.7275369961014E+02
A =	0.70	L =	13	N =	28	ROOT =	2.8320783784814E+02
A =	0.70	L =	13	N =	29	ROOT =	2.9366632459787E+02
A =	0.70	L =	13	N =	30	ROOT =	3.0411979521486E+02

ROOTS OF EQUATION 3

A =	0.70	L =	14	N =	1	ROOT =	1.6298197801697E+01
A =	0.70	L =	14	N =	2	ROOT =	2.0962445718886E+01
A =	0.70	L =	14	N =	3	ROOT =	2.7362608732091E+01
A =	0.70	L =	14	N =	4	ROOT =	3.5954320173131E+01
A =	0.70	L =	14	N =	5	ROOT =	4.5376231520936E+01
A =	0.70	L =	14	N =	6	ROOT =	5.5184977168472E+01
A =	0.70	L =	14	N =	7	ROOT =	6.5202470651408E+01
A =	0.70	L =	14	N =	8	ROOT =	7.5344487915655E+01
A =	0.70	L =	14	N =	9	ROOT =	8.5566411080009E+01
A =	0.70	L =	14	N =	10	ROOT =	9.5842532314205E+01
A =	0.70	L =	14	N =	11	ROOT =	1.0615704627057E+02
A =	0.70	L =	14	N =	12	ROOT =	1.1649972168093E+02
A =	0.70	L =	14	N =	13	ROOT =	1.2686365238129E+02
A =	0.70	L =	14	N =	14	ROOT =	1.3724401239463E+02
A =	0.70	L =	14	N =	15	ROOT =	1.4763732978490E+02
A =	0.70	L =	14	N =	16	ROOT =	1.5804104408125E+02
A =	0.70	L =	14	N =	17	ROOT =	1.6845322625689E+02
A =	0.70	L =	14	N =	18	ROOT =	1.7887239576384E+02
A =	0.70	L =	14	N =	19	ROOT =	1.8929739758839E+02
A =	0.70	L =	14	N =	20	ROOT =	1.9972731758454E+02
A =	0.70	L =	14	N =	21	ROOT =	2.1016142280732E+02
A =	0.70	L =	14	N =	22	ROOT =	2.2059919157778E+02
A =	0.70	L =	14	N =	23	ROOT =	2.3103991936899E+02
A =	0.70	L =	14	N =	24	ROOT =	2.4148342065878E+02
A =	0.70	L =	14	N =	25	ROOT =	2.5192920592015E+02
A =	0.70	L =	14	N =	26	ROOT =	2.6237723553737E+02
A =	0.70	L =	14	N =	27	ROOT =	2.7282702716101E+02
A =	0.70	L =	14	N =	28	ROOT =	2.8327845774014E+02
A =	0.70	L =	14	N =	29	ROOT =	2.9373135225147E+02
A =	0.70	L =	14	N =	30	ROOT =	3.0418555971849E+02

ROOTS OF EQUATION 3

A	=	0.20	L	=	12	N	=	1	ROOT =	1.4250340813425E+01
A	=	0.20	L	=	12	N	=	2	ROOT =	1.9270293740124E+01
A	=	0.20	L	=	12	N	=	3	ROOT =	2.3194996189408E+01
A	=	0.20	L	=	12	N	=	4	ROOT =	2.6837517906523E+01
A	=	0.20	L	=	12	N	=	5	ROOT =	3.0339500662646E+01
A	=	0.20	L	=	12	N	=	6	ROOT =	3.3756993413442E+01
A	=	0.20	L	=	12	N	=	7	ROOT =	3.7118245184275E+01
A	=	0.20	L	=	12	N	=	8	ROOT =	4.0439037149726E+01
A	=	0.20	L	=	12	N	=	9	ROOT =	4.3727499330406E+01
A	=	0.20	L	=	12	N	=	10	ROOT =	4.6984494520835E+01
A	=	0.20	L	=	12	N	=	11	ROOT =	5.0202048220276E+01
A	=	0.20	L	=	12	N	=	12	ROOT =	5.3365463668873E+01
A	=	0.20	L	=	12	N	=	13	ROOT =	5.6472294619653E+01
A	=	0.20	L	=	12	N	=	14	ROOT =	5.9566820564755E+01
A	=	0.20	L	=	12	N	=	15	ROOT =	6.2729411926460E+01
A	=	0.20	L	=	12	N	=	16	ROOT =	6.6008127669757E+01
A	=	0.29	L	=	12	N	=	17	ROOT =	6.9399175608800E+01
A	=	0.20	L	=	12	N	=	18	ROOT =	7.2878921787525E+01
A	=	0.20	L	=	12	N	=	19	ROOT =	7.6425434803324E+01
A	=	0.20	L	=	12	N	=	20	ROOT =	8.0022817581494E+01
A	=	0.20	L	=	12	N	=	21	ROOT =	8.3660047484341E+01
A	=	0.20	L	=	12	N	=	22	ROOT =	8.7329356770747E+01
A	=	0.20	L	=	12	N	=	23	ROOT =	9.1025091714511E+01
A	=	0.20	L	=	12	N	=	24	ROOT =	9.4742999219265E+01
A	=	0.20	L	=	12	N	=	25	ROOT =	9.8479786044825E+01
A	=	0.20	L	=	12	N	=	26	ROOT =	1.0223284009419E+02
A	=	0.20	L	=	12	N	=	27	ROOT =	1.0600004832533E+02
A	=	0.20	L	=	12	N	=	28	ROOT =	1.0977967355040E+02
A	=	0.20	L	=	12	N	=	29	ROOT =	1.1357026837354E+02
A	=	0.20	L	=	12	N	=	30	ROOT =	1.1737061315389E+02

ROOTS OF EQUATION 3

A	=	0.20	L	=	13	N	=	1	ROOT =	1.5310087383718E+01
A	=	0.20	L	=	13	N	=	2	ROOT =	2.0406580841227E+01
A	=	0.20	L	=	13	N	=	3	ROOT =	2.4362037522081E+01
A	=	0.20	L	=	13	N	=	4	ROOT =	2.8062136644515E+01
A	=	0.20	L	=	13	N	=	5	ROOT =	3.1593807124512E+01
A	=	0.20	L	=	13	N	=	6	ROOT =	3.5035875699862E+01
A	=	0.20	L	=	13	N	=	7	ROOT =	3.8417901559175E+01
A	=	0.20	L	=	13	N	=	8	ROOT =	4.1757120008505E+01
A	=	0.20	L	=	13	N	=	9	ROOT =	4.5063827376635E+01
A	=	0.20	L	=	13	N	=	10	ROOT =	4.8343123230997E+01
A	=	0.20	L	=	13	N	=	11	ROOT =	5.1594338229568E+01
A	=	0.20	L	=	13	N	=	12	ROOT =	5.4809920655493E+01
A	=	0.20	L	=	13	N	=	13	ROOT =	5.7973473832610E+01
A	=	0.20	L	=	13	N	=	14	ROOT =	6.1083309874840E+01
A	=	0.20	L	=	13	N	=	15	ROOT =	6.4176722761195E+01
A	=	0.20	L	=	13	N	=	16	ROOT =	6.7328602236451E+01
A	=	0.20	L	=	13	N	=	17	ROOT =	7.0589690641261E+01
A	=	0.20	L	=	13	N	=	18	ROOT =	7.3960775045199E+01
A	=	0.20	L	=	13	N	=	19	ROOT =	7.7420763099170E+01
A	=	0.20	L	=	13	N	=	20	ROOT =	8.0948397865503E+01
A	=	0.20	L	=	13	N	=	21	ROOT =	8.4527853141989E+01
A	=	0.20	L	=	13	N	=	22	ROOT =	8.8148044584404E+01
A	=	0.20	L	=	13	N	=	23	ROOT =	9.1801134736071E+01
A	=	0.20	L	=	13	N	=	24	ROOT =	9.5481412036392E+01
A	=	0.20	L	=	13	N	=	25	ROOT =	9.9184579769952E+01
A	=	0.20	L	=	13	N	=	26	ROOT =	1.0290730304181E+02
A	=	0.20	L	=	13	N	=	27	ROOT =	1.0664693518939E+02
A	=	0.20	L	=	13	N	=	28	ROOT =	1.1040133010143E+02
A	=	0.20	L	=	13	N	=	29	ROOT =	1.1416871908255E+02
A	=	0.20	L	=	13	N	=	30	ROOT =	1.1794762446162E+02

```
 1  C
 2  C
 3  C***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   *** . *
 4  C
 5  C
 6  C               MINIMA OF ROOTS OF EQUATION 3
 7  C
 8  C
 9  C***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   *** . *
10  C
11  C
12  C
13  C
14  C
15  C
16  C
17  C
18  C
19         PROGRAM CROOTS (TAPE4,ROOTS,TAPE5=ROOTS)
20  C      CHAT MINRUT CROOTS , PEXX P32 M M / T V
21  C  WHEN FUNC(X) CHANGES SIGN SUBROUTINE NVPOL LOCATES THE ROOT
22  C  THE TOLERANCE ALLOWED IN X IS XTOL
23         EXTERNAL FUNC
24         COMMON /PEXT/L,LM,LP,AGFL,BOFL
25         CALL CHANGE(4N+PEX)
26         CALL DEVICE (6HCREATE,5HROOTS,50000)
27         CALL ASSIGN(4,0,6HINDATA)
28         NAMELIST/BLOCK1/DELX,XO,XTOL,YTOL,IMIN,IMAX,ITOLO,LMIN,LMAX
29         WRITE (5,36)
30  36    FORMAT (5X,16HINPUT PARAMETERS,//)
31         INPUT DATA BLOCK1,4,5
32         REAL J((0,500)),Y((0,500))
33         INTEGER PAGENO
34         PAGENO=0
35         DO 2 L=LMIN,LMAX
36         WRITE (5,39)
37  39    FORMAT (1H1)
38         WRITE (5,40)
39  40    FORMAT (3X,1HL,4X,1HN,26X,3H MU,27X,13HALPHA( MU    ))
40         WRITE (5,41)
41  41    FORMAT (38X,3HMIN,33X,3HMIN,//)
42         LM=L-1
43         LP=L+1
44         TEM=L*LP
45         SQRTEM=SQRT(TEM)
46         CALL SJYMEC(SQRTEM,J,Y,MN,L)
47         AOFL=SQRTEM*J(LM)-LP*J(L)
48         BOFL=SQRTEM*Y(LM)-LP*Y(L)
49         N=1
50         ALF=1.0
51         WRITE (5,37) N,SQRTEM,ALF
52         X1=XO
53         F1=FUNC(XO)
54         DO 1 K=IMIN,IMAX
55         X=XO+K*DELX
56         F2=FUNC(X)
57         IF(F1*F2.GT.0.0) 98,99
58  98    F1=F2
59         X1=X
60         GO TO 1
```

```
61      90 X2=X
62         ITOL=ITOLO
63         CALL  HVPOL(FUNC,X1,X2,XTOL,YTOL,ITOL,Y1,Y2)
64         NHB=1
65         ALF=SQRTEM/X1
66         IF(N.EQ.15) 15,16
67      16 WRITE (5,37) N,X1,ALF
68      37 FORMAT(5X,I5,12X,E25.13,12X,E25.13)
69         GO TO 17
70      15 WRITE (5,38) L,N,X1,ALF
71      38 FORMAT (2I5,12X,E25.13,12X,E25.13)
72      17 F1=F2
73         X1=X
74         IF(N.GE.30) 4,1
75       1 CONTINUE
76       4 PAGENO=PAGENO+1
77         WRITE (5,35) PAGENO
78      35 FORMAT (/////,36X,I5)
79       2 CONTINUE
80         CALL  EXIT
81         END
```

```
61    99  X2=X
62        ITOL=ITOLO
63        CALL  NVPOL(FUNC,X1,X2,XTOL,YTOL,ITOL,Y1,Y2)
64        N=N+1
65        ALF=SQRTEM/X1
66        IF(N.EQ.15)15,16
67    16  WRITE (5,37) N,X1,ALF
68    37  FORMAT(5X,I5,12X,E25.13,12X,E25.13)
69        GO TO 17
70    15  WRITE (5,36) L,N,X1,ALF
71    36  FORMAT  (2I5,12X,E25.13,12X,E25.13)
72    17  F1=F2
73        X1=X
74        IF(N.GE.30) 4,1
75     1  CONTINUE
76     4  PAGENO=PAGENO+1
77        WRITE (5,35) PAGENO
78    35  FORMAT (/////,36X,I5)
79     2  CONTINUE
80        CALL  EXIT
81        END
```

```
 91        SUBROUTINE NVPOL(FUN,X1,X2,XTOL,YTOL,ITOL,Y1,Y2)
 92   C
 93   C
 94   C
 95   C          A STABLE METHOD OF INVERSE INTERPOLATION
 96   C
 97   C          J.M.BLATT
 98   C
 99   C
100   C          THE AUSTRALIAN COMPUTER JOURNAL
101   C
102   C          VOL. 7   #2   JULY,1975      PP 51-57
103   C
104   C
105   C
106   C          METHOD
107   C          AT EVERY STAGE OF THE  ITERATION AT LEAST ONE ROOT
108   C          IS GUARANTEED TO LIE WITHIN THE INTERVAL (X1,X2).
109   C
110   C
111   C
112   C          IF CERTAIN CONDITIONS HOLD THE ROUTINE CALCULATES THE
113   C          NEXT APPROXIMATION USING MULLER'S QUADRATIC POLYNOMIAL
114   C
115   C          APPROXIMATION.   OTHERWISE A LINEAR APPROXIMATION IS USED.
116   C
117   C
118   C          "REDUCED VARIABLES" ARE USED FOR THE MULLER APPROXIMATION.
119   C
120   C
121   C
122   C
123   C
124   C
125   C          INVERSE INTERPOLATION BY MODIFIED MULLER METHOD
126   C
127   C
128   C
129   C          INPUT REQUIREMENTS
130   C          FUN=FUNCTION NAME  WE WANT TO FIND X SUCH THAT F(X)=0
131   C
132   C          NOTE THE ACTUAL NAME MUST BE DECLARED EXTERNAL IN THE
133   C          CALLING PROGRAM.
134   C
135   C          X1=X-VALUE AT ONE END OF INTERVAL.
136   C
137   C          X2=X-VALUE AT OTHER END OF INTERVAL.
138   C
139   C          BY ASSUMPTION, Y1 AND Y2 HAVE OPPOSITE SIGNS. ROUTINE
140   C
141   C          CHECKS THIS, RETURNS WITH ITOL=-1 IF UNTRUE.
142   C
143   C          XTOL=TOLERANCE ON ROOT,I.E  ON ABS(X1-X2) AT THE END
144   C
145   C          YTOL=OPTIONAL TOLERANCE ON ABS(Y), IGNORED IF =0.
146   C
147   C          ITOL=MAX.NO. OF ITERATIONS. IF ITOL LE. 0, ITOL=60.
148   C
149   C
150   C
```

```
151 C
152 C
153 C        AFTER RETURN FROM ROUTINE
154 C
155 C        (X1,Y1) AND (X2,Y2) ARE THE BEST POINTS FOUND.
156 C
157 C        ABS(Y1).LE.ABS(Y2)
158 C
159 C        IF(Y1.NE.O) THEN Y1 AND Y2 HAVE OPPOSITE SIGNS
160 C
161 C        ITOL IS THE ACTUAL NO. OF ITERATIONS USED.  IF THE
162 C
163 C        INITIAL POINTS WERE CHOSEN SO BADLY THAT Y1 AND Y2
164 C
165 C        HAO THE SAME SIGN, THEN ITOL IS SET TO -1, AND WE
166 C
167 C        EXIT IMMEDIATELY.
168 C
169 C
170 C        USER MUST SUPPLY
171 C
172 C        1. AN ACTUAL FUNCTION NAME TO REPLACE THE NOMINAL "FUN"
173 C
174 C        2. VALUES OF X1,X2,XTOL.
175 C
176 C        3. OPTIONALLY; VALUES OF YTOL,ITOL.
177 C
178 C        4  FUNCTION SUBPROGRAM, OF DECLARED NAME, TO EVALUATE
179 C
180 C        F(X).
181 C
182 C        5  WITHIN THE CALLING PROGRAM, AN "EXTERNAL" OECLARATION
183 C
184 C        FOR THAT FUNCTION NAME.
185 C
186 C
187 C
188 C
189 C
190 C
191 C
192        DIMENSION X(3),Y(3)
193        I=1          $K=3       $ITER=O   $MULLER=O
194        ITCH=1       $NOTCH=1   $XTOL=ABS(XTOL)
195        YTOL=ABS(YTOL)          $IF(ITOL.LE.O) ITOL=60
196        X(1)=X1      $Y(1)=FUN(X1)        $X(2)=X2
197        Y(2)=FUN(X2) $IF(Y(1)*Y(2)) 1100,9000,1050
198  1050  ITOL=-1      $GO TO 9100
199  1100  IF(ABS(Y(2)).LE.YTOL.OR.ABS(X(1)-X(2)).LE.XTOL.OR.ITER.GE.ITOL)
200      C GO TO 9000
201 C
202 C
203 C
204 C        TO DISPLAY INTERMEDIATE VALUES REMOVE THE "C" IN
205 C        COLUMN 1 OF THE FOLLOWING CARDS
206 C
207 C
208 C
209 C
210 C
```

```
211 C
212 C
213 C                    DEBUG PRINTING
214 C
215 C      WRITE (3,2323)  I,K,ITER,MULLER,ITCH,NOTCH,MILLER,JJ
215 2323 FORMAT (8I5)
216 C      WRITE (3,2424) X(1),X(2),X(3),XNEW
217 C      WRITE (3,2424) Y(1),Y(2),Y(3),YNEW
218 C      WRITE (3,2424) PHI
219 2424 FORMAT (2X,4E26.13)
220 C
221 C
222       ITER=ITER+1    $PHI=0.5   $MILLER=1 $IF(ITCH.LE.0) GO TO 1150
223       ITCH=ITCH-1    $GO TO 2000
224 1150 MILLER=2        $IF(MULLER.GE.5) GO TO 2000
225       IF(X(2).EQ.X(K)) GO TO 9000      $ALPHA=(X(K)-X(I))/(X(2)-X(I))
226       IF(ALPHA.LE.1.001) GO TO 1550    $IF(ALPHA.GE.1000.0) GO TO 2000
227       BETA=Y(K)/Y(2)                   $GAMMA=-Y(I)/Y(2)
228       B=(ALPHA+1.0)*GAMMA/ALPHA+(ALPHA-BETA/ALPHA)/(ALPHA-1.0)
229       IF(B.LE.2.0*(B-GAMMA-1.0)*ALPHA.OR.B.LE.0.0) GO TO 2000
230       PHI=(2.0*GAMMA)/(B+SQRT((B-(2.0*GAMMA))**2+4.0*GAMMA))
231       MILLER=3        $MULLER=MULLER+1    $GO TO 2000
232 1550 PHI=AMAX1(1.0-2.0*(ALPHA-1.0),0.5)
233 C
234 C                    PATHS REJOIN
235 C
236 2000 XNEW=X(I)+PHI*(X(2)-X(I))
237       IF(XNEW.EQ.X(I).OR.XNEW.EQ.X(2)) GO TO 9000
238       YNEW=FUN(XNEW)
239       IF(MILLER.NE.3.OR.ABS(YNEW).LT.0.3*AMIN1(ABS(Y(I)),ABS(Y(2))))
240       C GO TO 2010
241 C
242 C                    A MULLER-TYPE ITERATION HAS PROVED UNSUCCESSFUL
243 C                    INHIBIT MULLER-TYPE ITERATIONS FOR A FEW TIMES,
244 C                    AND UP THE NUMBER OF INHIBITIONS FOR THE NEXT
246 C                    SUCH OCCURRENCE.
247 C
248       ITCH=NOTCH       $NOTCH=NOTCH+1
249 2010 JJ=1             $IF(SIGN(YNEW,Y(2)).EQ.YNEW) GO TO 2040
250       IF(MILLER.EQ.1.OR.ABS(Y(K)).GT.ABS(Y(I))) GO TO 2030
251 C
252 C                    DISCARD POINT I
253 C
254       X(I)=XNEW        $Y(I)=YNEW       $GO TO 2060
255 C
256 C                    PREPARE FOR SWITCHING LABELS I AND K.
257 C
258 2030 JJ=2
259 C
260 C                    DISCARD POINT K
261 C
262 2040 X(K)=X(2)        $Y(K)=Y(2)        $X(2)=XNEW        $Y(2)=YNEW
263 C
264 C                    TEST FOR PRECISE ROOT.
265 C
266 2060 IF(Y(2).EQ.0.0) GO TO 6000       $GO TO (1100,2100),JJ
267 C
268 C                    INTERCHANGE LABELS I AND K
269 C
270 2100 JJ=1            $I=K       $K=JJ       $GO TO 1100
```

```
271 C
272 CC                    FINISHED
273 CC
274 CC                    Y(2) WAS EXACTLY ZERO. SELECT THE BEST OTHER ONE.
275 C
276    8000 IF(ABS(Y(K)).LT.ABS(Y(I)))  I=K
277 C
278 C                     REPORT NO. OF ITERATIONS USED.
279 C
280    9000 ITOL=ITER
281 C
282 C                     REPORT THE TWO BEST POINTS FOUND.
283 C
284    9100 IF(ABS(Y(2)).LE.ABS(Y(I)))  GO TO 9200
285          I1=I         $I2=2       $GO TO 9300
286    9200  I1=1         $I2=2
287    9300  X1=X(I1)     $Y1=Y(I1)      $X2=X(I2)       $Y2=Y(I2)
288          RETURN
289          END
```

```
290        SUBROUTINE SJYMEC(X,J,Y,MN,NOUT)
291 C      JSUBN(X), YSUBN(X)      SPHERICAL BESSEL FUNCTIONS
292 C      DO NOT USE X=0.
293 C      JSUBO(O)=1.   JSUB N (O)=O.  FOR ALL N.GT.O
294 C      YSUB N (O)= INFINITY  FOR ALL N.GE.O.
295 C      Y SUB N (X)= -J SUB (-(N+1)) (X)         FOR ALL N.GE.O
296 C      MN  MAXIMUM NUMBER OF SUBSCRIPT OF BESSEL FUNCTIONS COMPUTED
297 C      NOUT    MAXIMUM SUBSCRIPT OF DESIRED BESSEL FUNCTIONS
298 C      RECURRENCE TECHNIQUES FOR BESSEL FUNCTIONS
299 C      FR  MECHEL   MATH. OF COMP   VOL  22  NO. 101  JAN. 1968
300        REAL J  JX
301        DIMENSION J((0,500)),Y((0,500))
302 C      THE DIMENSION OF J AND Y MAY BE VARIED TO SUIT THE USERS NEEDS
303        DATA (BOUND=1 E13),(NADD=10),(ALPHA=1.),(NXADD=10)
304 C      BOUND  NADD  ALPHA  NXADD   MAY BE VARIED
305 C      NXADD CONTROLS THE NUMBER OF TERMS IN THE CONTINUED FRACTION
306        MN=1   $J(O)=SINF(X)/X   $Y(O)=-COSF(X)/X
307        Y(1)=Y(O)/X-J(O)   $J(1)=J(O)/X+Y(O)
308    200 NM1N=1   $NMAX=ALPHA*NOUT
309 C      UPWARD RECURSION VALID FOR N<X FOR BOTH BESSEL FUNCTIONS
310        DO 66 N=1,X   $MN=N+1 $TWON1=N+N+1 $J(MN)=TWON1*J(N)/X-J(N-1)
311     66 Y(MN)=TWON1*Y(N)/X-Y(N-1)  $IF(NOUT.LE.MN) RETURN
312        JX=J(MN)   $MNOUT=MM1N=MN
313 C      UPWARD RECURSION FOR YSUBN(X) TO OBTAIN GOOD GUESS FOR JSUBN(X)
314      3 DO 1  N=MM1N,NMAX  $TWON1=N+N+1     $MN=N+1
315      1 Y(MN )=TWON1*Y(N)/X-Y(N-1)    $IF(ABSF(Y(MN )).GT.BOUND) 2,22
316     22 NM1N=NMAX+1   $NMAX=NMAX+NADD     $GO TO 3
317      2 X2=X*X   $J(MN-1)=-1 /(X2*Y(MN))   $PM1N1=QO=1   $QM1N1=O
318 C      DEVELOP CONTINUED FRACTION TO OBTAIN GOOD GUESS FOR JSUBN+1(X)
319        BO=PO=MN+MN+1          $DO 4 N=1,NXADD  $BO=BO+2
320        P1=BO*PO-X2*PM1N1      $Q1=BO*QO-X2*QM1N1
321        PM1N1=PO  $PO=P1   $QM1N1=QO   $QO=Q1
322      4 CONTINUE
323        QNMAX1=P1/Q1   $J(MN)    =X*J(MN-1)/QNMAX1
324        DO 5 N=MN-1, MNOUT+1,-1  $TWON1=N+N+1
325      5 J(N-1)=TWON1*J(N)/X-J(N+1)   $C=JX/J(MNOUT)
326 C      CORRECT BESSEL FUNCTIONS WITH WEIGHTING FACTOR
327        IF (X.LT.1.E-3) RETURN
328        DO 6 N=MNOUT,NOUT
329      6 J(N)=C*J(N)   $RETURN
330        END
```

```
INPUT PAPAMETERS

LMIN        =1
LMAX        =15
DELX        =1.0
X0          =1.0
XTOL        =1.0E-12
YTOL        =0.0
IMIN        =1
IMAX        =7000
ITOL0       =50
END
```

L	N	MU MIN	ALPHA(MU) MIN
	1	1.4142135623731E+00	1.0000000000000E+00
	2	5.7735251860330E+00	2.4494801993364E-01
	3	9.0453114050091E+00	1.5634769207225E-01
	4	1.2245745609951E+01	1.1548611308926E-01
	5	1.5421320276611E+01	9.1705042328011E-02
	6	1.8585153401167E+01	7.6093725558612E-02
	7	2.1742450467330E+01	6.5043090268058E-02
	8	2.4895737183735E+01	5.6805450344207E-02
	9	2.8046380322565E+01	5.0424102722277E-02
	10	3.1195187450996E+01	4.5334350517037E-02
	11	3.4342666944948E+01	4.1179491524059E-02
	12	3.7489155032636E+01	3.7722271200483E-02
	13	4.0634803079206E+01	3.4802944052195E-02
	14	4.3780015562246E+01	3.2302719490092E-02
1	15	4.6924672640760E+01	3.0137952654456E-02
	16	5.0068944154815E+01	2.8245324247308E-02
	17	5.3212898629177E+01	2.6576518077473E-02
	18	5.6356589245843E+01	2.5094023277454E-02
	19	5.9500057913519E+01	2.3769272031409E-02
	20	6.2643338106288E+01	2.2575641802063E-02
	21	6.5786456885141E+01	2.1497031901904E-02
	22	6.8929436364412E+01	2.0516830500347E-02
	23	7.2072294793215E+01	1.9622152540455E-02
	24	7.5215847364944E+01	1.8802269119254E-02
	25	7.8357770631418E+01	1.8048174449715E-02
	26	8.1500203974580E+01	1.7352253187415E-02
	27	8.4642707972864E+01	1.6708021985600E-02
	28	8.7785226680706E+01	1.6109926643899E-02
	29	9.0927606896314E+01	1.5553181337520E-02
	30	9.4069934463697E+01	1.5033640349914E-02

1

L	N	MU MIN	ALPHA(MU) MIN
	1	2.449489742783E+00	1.000000000000E+00
	2	7.031374438266E+00	3.483657091922E-01
	3	1.036798929660E+01	2.362550416198E-01
	4	1.368420848706E+01	1.800527638049E-01
	5	1.600293018791E+01	1.452775349531E-01
	6	1.998208643653E+01	1.225793142932E-01
	7	2.315214620711E+01	1.057996035745E-01
	8	2.631464918642E+01	9.308464368063E-02
	9	2.947261941241E+01	8.311069240032E-02
	10	3.262739336484E+01	7.507463790090E-02
	11	3.577902714271E+01	6.846007760218E-02
	12	3.893049510236E+01	6.291956296237E-02
	13	4.207979760733E+01	5.821058751177E-02
	14	4.522002184384E+01	5.415867515144E-02
2	15	4.837537977207E+01	5.063504936445E-02
	16	5.152203106200E+01	4.754256950385E-02
	17	5.466809835247E+01	4.480656574131E-02
	18	5.781367740817E+01	4.236868942775E-02
	19	6.095886441143E+01	4.018268027177E-02
	20	6.410365938442E+01	3.821138709240E-02
	21	6.724017260359E+01	3.642462902758E-02
	22	7.039242460027E+01	3.479763279490E-02
	23	7.353644075377E+01	3.330987264533E-02
	24	7.668027322903E+01	3.194419685203E-02
	25	7.982392167502E+01	3.068616138349E-02
	26	8.296741414112E+01	2.952515565000E-02
	27	8.611076774369E+01	2.844580076296E-02
	28	8.925399718091E+01	2.744483410659E-02
	29	9.239711514604E+01	2.651045694350E-02
	30	9.554013265823E+01	2.563833307145E-02

L	N	MU MIN	ALPHA(MU MIN)
	1	3.4641016151377E+00	1.0000000000000E+00
	2	8.2657188835997E+00	4.1909259967029E-01
	3	1.1673635125063E+01	2.9674575040472E-01
	4	1.4951883383937BE+01	2.3168320836360E-01
	5	1.8178611613355E+01	1.9055919083354E-01
	6	2.1378815100922E+01	1.6203431208333E-01
	7	2.4563380747161E+01	1.4102706996219E-01
	8	2.7737895817874E+01	1.2488696467399E-01
	9	3.0905547292557E+01	1.1206672612544E-01
	10	3.4068294214778E+01	1.0168103953786E-01
	11	3.7227410464848E+01	9.3052446352901E-02
	12	4.0383761681148E+01	8.5779547601686E-02
	13	4.3537357367158E+01	7.9565092720738E-02
3	14	4.6690439458695E+01	7.4192953745966E-02
	15	4.9841536398582E+01	6.9502304010763E-02
	16	5.2991497479836E+01	6.5370894952645E-02
	17	5.6140515339026E+01	6.1704129195103E-02
	18	5.9288741404634E+01	5.8427646267977E-02
	19	6.2436296273112E+01	5.5482176584993E-02
	20	6.5583276962617E+01	5.2819892136715E-02
	21	6.8729762817588E+01	5.0401768738735E-02
	22	7.1875819128173E+01	4.8195647119658E-02
	23	7.5021500164527E+01	4.6174784662274E-02
	24	7.8166851441099E+01	4.4316760271230E-02
	25	8.1311912271187E+01	4.2602634235578E-02
	26	8.4456712423731E+01	4.1016297174319E-02
	27	8.7601282800271E+01	3.9543959910220E-02
	28	9.0745646466209E+01	3.8173749926399E-02
	29	9.3889824245461E+01	3.6895389281818E-02
	30	9.7033783425314BE+01	3.5699935467070E-02

L	N	MU MIN	ALPHA(MU) MIN
	1	4.4721359549996E+00	1.0000000000000E+00
	2	9.4781976654249E+00	4.7183400398087E-01
	3	1.2958171560693E+01	3.4512090932677E-01
	4	1.6200879262112E+01	2.7468639027420E-01
	5	1.9538375135660E+01	2.2088986020503E-01
	6	2.2761299915211E+01	1.9647981317670E-01
	7	2.5963391674113E+01	1.7224775603792E-01
	8	2.9151862664433E+01	1.5340024037484E-01
	9	3.2330902573660E+01	1.3832380207569E-01
	10	3.5503125967265E+01	1.2596456084171E-01
	11	3.8670254700457E+01	1.1564795703354E-01
	12	4.1833471609331E+01	1.0690329496828E-01
	13	4.4993617340996E+01	9.9394896860734E-02
	14	4.8151306463267E+01	9.2876731359537E-02
4	15	5.1306999017035E+01	8.7164247305528E-02
	16	5.4461046426702E+01	8.2116232501364E-02
	17	5.7613721086263E+01	7.7622757367215E-02
	18	6.0765241061673E+01	7.3596942542541E-02
	19	6.3915776521421E+01	6.9969203198224E-02
	20	6.7065468021276E+01	6.6683139429979E-02
	21	7.0214429969901E+01	6.3692548054818E-02
	22	7.3362756939986E+01	6.0959213387049E-02
	23	7.6510522799204E+01	5.8451249569142E-02
	24	7.9657808842442E+01	5.6141819952504E-02
	25	8.2804656214507E+01	5.4008266677835E-02
	26	8.5951117776620E+01	5.2031145273808E-02
	27	8.9097234585997E+01	5.0193980604408E-02
	28	9.2243042064632E+01	4.8482095287643E-02
	29	9.5388570935454E+01	4.6883752073968E-02
	30	9.8533847977602E+01	4.5386799021755E-02

1

L	N	MU MIN	ALPHA(MU MIN)
	1	5.477225575051⁷E+00	1.0000000000000E+00
	2	1.0672464566816E+01	5.1321094024355E-01
	3	1.4223187678159E+01	3.0509120185536E-01
	4	1.7591150972059E+01	3.1136254721204E-01
	5	2.0800000783463E+01	2.6230917251935E-01
	6	2.4127954196988E+01	2.2700745907979E-01
	7	2.7349036543334E+01	2.0027124415704E-01
	8	3.0552020189366E+01	1.7927065674915E-01
	9	3.3744506472078E+01	1.6231458532617E-01
	10	3.6927343165253E+01	1.4832438798916E-01
	11	4.0103516224197E+01	1.3657719049949E-01
	12	4.3274535744132E+01	1.2656925096636E-01
	13	4.6441483769736E+01	1.1793821235791E-01
	14	4.9605157004985E+01	1.1041645477508E-01
5	15	5.2766155651609E+01	1.0380186897100E-01
	16	5.5924940819923E+01	9.7938871186082E-02
	17	5.9081872822341E+01	9.2705686421310E-02
	18	6.2237224718341E+01	8.8005602469713E-02
	19	6.5391264231005E+01	8.3760814834571E-02
	20	6.8544139940449E+01	7.9908006429292E-02
	21	7.1696017910276E+01	7.6395115582376E-02
	22	7.4847025327188E+01	7.3178934648403E-02
	23	7.7997268574433E+01	7.0223299804629E-02
	24	8.1146837330677E+01	6.7497708539542E-02
	25	8.4295807732693E+01	6.4976251160915E-02
	26	8.7444244645562E+01	6.2636775979084E-02
	27	9.0592204608861E+01	6.0460230531976E-02
	28	9.3739735385910E+01	5.8430136937221E-02
	29	9.6886879206505E+01	5.6532170505539E-02
	30	1.0003367277367E+02	5.4753018621096E-02

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L	N	MU MIN	ALPHA(MU) MIN
	1	6.4807406984079E+00	1.0000000000000E+00
	2	1.1851701741945E+01	5.4681942218234E-01
	3	1.5471105805868E+01	4.1089317930653E-01
	4	1.8884251311768E+01	3.4318229467585E-01
	5	2.2206688914007E+01	2.9183732241798E-01
	6	2.5478963996106E+01	2.5435652326360E-01
	7	2.8720004399464E+01	2.2565249671511E-01
	8	3.1940078298294E+01	2.0290309365817E-01
	9	3.5145315382438E+01	1.8439842203397E-01
	10	3.8339630399580E+01	1.6903503322450E-01
	11	4.1525653292443E+01	1.5606595404454E-01
	12	4.4705222223061E+01	1.4496607725316E-01
	13	4.7879663669528E+01	1.3535476654846E-01
	14	5.1049960484667E+01	1.2694898559920E-01
6	15	5.4216857297414E+01	1.1953368419620E-01
	16	5.7380929091071E+01	1.1294241485759E-01
	17	6.0542627235458E+01	1.0704429462372E-01
	18	6.3702311405481E+01	1.0173478129339E-01
	19	6.6860270969510E+01	9.6929620601796E-02
	20	7.0016743896442E+01	9.2559870850988E-02
	21	7.3171929564716E+01	8.8566814184238E-02
	22	7.6325971556670E+01	8.4906721975403E-02
	23	7.9479026103262E+01	8.1542630867621E-02
	24	8.2631201170333E+01	7.8429704598492E-02
	25	8.5782954598224E+01	7.5548434140532E-02
	26	8.8933290186319E+01	7.2871933263270E-02
	27	9.2083360133132E+01	7.0379640025341E-02
	28	9.5232866977605E+01	6.8051913139175E-02
	29	9.8381865175299E+01	6.5873326215765E-02
	30	1.0153040235856E+02	6.3830542850907E-02

L	N	MU MIN	ALPHA(MU) MIN
	1	7.4833147735479E+00	1.0000000000000E+00
	2	1.3018409744005E+01	5.7482556784235E-01
	3	1.6784189051389E+01	4.4799030653701E-01
	4	2.0161987891912E+01	3.7115957005510E-01
	5	2.3517396054172E+01	3.1820337406022E-01
	6	2.6015206342405E+01	2.7906890617428E-01
	7	3.0076912301547E+01	2.4800595117340E-01
	8	3.3313943182302E+01	2.2463011155958E-01
	9	3.6533417587332E+01	2.0481479600542E-01
	10	3.9739871252634E+01	1.8832747402212E-01
	11	4.2936375376938E+01	1.7428460072470E-01
	12	4.6125091529546E+01	1.6223956474437E-01
	13	4.9307589279392E+01	1.5176801143421E-01
7	14	5.2485830008347E+01	1.4257996271149E-01
	15	5.5658320423780E+01	1.3445094355997E-01
	16	5.8828151019801E+01	1.2720635688565E-01
	17	6.1995050361422E+01	1.2070826186802E-01
	18	6.5159461734057E+01	1.1484617236543E-01
	19	6.9321737479449E+01	1.0953051034159E-01
	20	7.1482185977771E+01	1.0468785785060E-01
	21	7.4640305615680E+01	1.0025744852940E-01
	22	7.7798395228053E+01	9.6188549283205E-02
	23	8.0954562014941E+01	9.2438456676065E-02
	24	8.4109627621465E+01	8.8970965455066E-02
	25	8.7263712861592E+01	8.5755172776376E-02
	26	9.0416921426901E+01	8.2764538489600E-02
	27	9.3569342028214E+01	7.9976139057497E-02
	28	9.6721054747668E+01	7.7370063971536E-02
	29	9.9872124497693E+01	7.4928961194415E-02
	30	1.0302261275965E+02	7.2637594534627E-02

L	N	MU MIN	ALPHA(MU MIN)
	1	8.485201374230E+00	1.000000000000E+00
	2	1.417452961037E+01	5.986207804569E-01
	3	1.792436337026E+01	4.733937378393E-01
	4	2.142684035184E+01	3.960264270340E-01
	5	2.481433127551E+01	3.419500300066E-01
	6	2.813065913222E+01	3.015507994083E-01
	7	3.142066734692E+01	2.780541424072E-01
	8	3.467512195793E+01	2.447800470122E-01
	9	3.790933169407E+01	2.230304069595E-01
	10	4.112842796149E+01	2.063110333103E-01
	11	4.433598960872E+01	1.913862040274E-01
	12	4.753425223176E+01	1.785007800027E-01
	13	5.072526606086E+01	1.672791890279E-01
	14	5.391030409062E+01	1.573962706928E-01
8	15	5.709040448722E+01	1.486280536655E-01
	16	6.026637163130E+01	1.407962072918E-01
	17	6.343884467440E+01	1.337552940415E-01
	18	6.660833570010E+01	1.273906829232E-01
	19	6.977520546390E+01	1.216087379365E-01
	20	7.293996053307E+01	1.163240973125E-01
	21	7.610271059460E+01	1.114977431940E-01
	22	7.926377132791E+01	1.070511941595E-01
	23	8.242331814887E+01	1.029475820540E-01
	24	8.558152837033E+01	9.914851412235E-02
	25	8.873854670303E+01	9.562114424251E-02
	26	9.189449759335E+01	9.233720039072E-02
	27	9.504948865980E+01	8.927224642524E-02
	28	9.820361346362E+01	8.640498119126E-02
	29	1.013569537370E+02	8.371691520077E-02
	30	1.045095812039E+02	8.119142069547E-02

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L	N	MU MIN	ALPHA(MU) MIN
	1	9.4868329805051E+00	1.0000000000000E+00
	2	1.5321501487073E+01	6.1918105441721E-01
	3	1.9133229617683E+01	4.9583019542004E-01
	4	2.2677914374551E+01	4.1832916483498E-01
	5	2.6090003354407E+01	3.6349685302046E-01
	6	2.9440432182122E+01	3.2215069793306E-01
	7	3.2752302119032E+01	2.8965456538461E-01
	8	3.6024422050903E+01	2.6334448000040E-01
	9	3.9273728542699E+01	2.^15567182573776E-01
	10	4.2505050420878E+01	2.2318987603071E-01
	11	4.5724697409771E+01	2.0747217730090E-01
	12	4.8933052940786E+01	1.9387371950786E-01
	13	5.2132959106185E+01	1.8197380588319E-01
	14	5.5325951739136E+01	1.7147166351943E-01
9	15	5.8513210276761E+01	1.6213147314313E-01
	16	6.1695656757427E+01	1.5376824689305E-01
	17	6.4874023207705E+01	1.4623469474263E-01
	18	6.8048898704877E+01	1.3941198074004E-01
	19	7.1220762984422E+01	1.3320319220085E-01
	20	7.4390109911580E+01	1.2752831817408E-01
	21	7.7556970610288E+01	1.2232082952511E-01
	22	8.0721917101271E+01	1.1752487206917E-01
	23	8.3885082704174E+01	1.1309320649967E-01
	24	8.7046665070951E+01	1.0899559953759E-01
	25	9.0206833460421E+01	1.0516756454673E-01
	26	9.3365733689911E+01	1.0160936572312E-01
	27	9.6523492080018E+01	9.8285223380030E-02
	28	9.9680218624680E+01	9.5172674291830E-02
	29	1.0283600955926E+02	9.2252052769086E-02
	30	1.0599094945647E+02	8.9506066594875E-02

L	N	MU MIN	ALPHA(MU) MIN
	1	1.0400088401701E+01	1.0000000000000E+00
	2	1.6460772943816E+01	6.3715650033566E-01
	3	2.0332114908589E+01	5.1583854059722E-01
	4	2.3918861378696E+01	4.3848611000535E-01
	5	2.7371900816394E+01	3.8316877949220E-01
	6	3.0747430419442E+01	3.4110455210819E-01
	7	3.4072524221029E+01	3.0781659772740E-01
	8	3.7362652820752E+01	2.8071048734195E-01
	9	4.0627312909315E+01	2.5815363435707E-01
	10	4.3872240846745E+01	2.3905701733753E-01
	11	4.7103265618349E+01	2.2661599987439E-01
	12	5.0321942648296E+01	2.0841978528141E-01
	13	5.3531048986655E+01	1.9592533081719E-01
	14	5.6732297920040E+01	1.8486979841718E-01
10	15	5.9927009980747E+01	1.7501437974414E-01
	16	6.3116220928590E+01	1.6617104648214E-01
	17	6.6300755650620E+01	1.5818957605746E-01
	18	6.9481279849764E+01	1.5094840659785E-01
	19	7.2658337109960E+01	1.4434803903961E-01
	20	7.5832375960743E+01	1.3830620956847E-01
	21	7.9003769984153E+01	1.3275427848323E-01
	22	8.2172832981545E+01	1.2763450037139E-01
	23	8.5339830571239E+01	1.2289792950721E-01
	24	8.8504989166839E+01	1.1850279380217E-01
	25	9.1668503005969E+01	1.1441321869321E-01
	26	9.4830539709182E+01	1.1059021565780E-01
	27	9.7991244717695E+01	1.0703087313401E-01
	28	1.0115074486669E+02	1.0368770308715E-01
	29	1.0430915128548E+02	1.0054811445064E-01
	30	1.0746656176878E+02	9.7593970711254E-02

L	N	MU MIN	ALPHA(MU) MIN
	1	1.1489125293076E+01	1.0000000000000E+00
	2	1.7593077668519E+01	6.5304006296822E-01
	3	2.1522124707610E+01	5.3382058101410E-01
	4	2.5149982072705E+01	4.5682439295037E-01
	5	2.8634890128750E+01	4.0122819544332E-01
	6	3.2036003298259E+01	3.5863166781795E-01
	7	3.5382403810911E+01	3.2471296620986E-01
	8	3.8690582316765E+01	2.9694088536474E-01
	9	4.1970771959123E+01	2.7374110021769E-01
	10	4.5229735781369E+01	2.5401707736202E-01
	11	4.8472158041709E+01	2.3702524825055E-01
	12	5.1701403684183E+01	2.2222076141795E-01
	13	5.4919961782279E+01	2.0919761995871E-01
	14	5.8129710482302E+01	1.9764632606253E-01
11	15	6.1332132309553E+01	1.8732636320369E-01
	16	6.4528350795290E+01	1.7804771315902E-01
	17	6.7719290397617E+01	1.6965808746100E-01
	18	7.0905692672611E+01	1.6203309121554E-01
	19	7.4088164627861E+01	1.5507369295467E-01
	20	7.7267208273841E+01	1.4869341794203E-01
	21	8.0443242634412E+01	1.4282275200280E-01
	22	8.3616620389067E+01	1.3740241161993E-01
	23	8.6787640632812E+01	1.3238204437064E-01
	24	8.9956558764862E+01	1.2771859496213E-01
	25	9.3123594260558E+01	1.2337501987874E-01
	26	9.6288936819902E+01	1.1931926628067E-01
	27	9.9452751289821E+01	1.1552345354021E-01
	28	1.0261518163304E+02	1.1196321158562E-01
	29	1.0577635415637E+02	1.0861714212698E-01
	30	1.0893630015358E+02	1.0546637658493E-01

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L	N	MU MIN	ALPHA(MU MIN)
	1	1.240999599697E+01	1.000000000000E+00
	2	1.871929194908E+01	6.672250774941E-01
	3	2.270418675220E+01	5.501186249509E-01
	4	2.637221403115E+01	4.736043770175E-01
	5	2.988843071902E+01	4.178873127937E-01
	6	3.331499201017E+01	3.749061600694E-01
	7	3.668264526025E+01	3.404078766363E-01
	8	4.000092148150E+01	3.121802721568E-01
	9	4.330475355525E+01	2.884209004487E-01
	10	4.657739972526E+01	2.681557165163E-01
	11	4.983190005484E+01	2.506425397809E-01
	12	5.307191861246E+01	2.353409547523E-01
	13	5.630013341696E+01	2.218465006553E-01
	14	5.951860660839E+01	2.098502755272E-01
12	15	6.272893135043E+01	1.991061336310E-01
	16	6.593236463721E+01	1.894364939817E-01
	17	6.912991292276E+01	1.806742619617E-01
	18	7.232239256036E+01	1.726988772719E-01
	19	7.551047329538E+01	1.654074653715E-01
	20	7.869471019844E+01	1.587145561029E-01
	21	8.187556750457E+01	1.525485120500E-01
	22	8.505343667076E+01	1.468480104010E-01
	23	8.822865029099E+01	1.415639472620E-01
	24	9.140149280295E+01	1.366490031243E-01
	25	9.457220904625E+01	1.320603541471E-01
	26	9.774101095347E+01	1.277866463110E-01
	27	1.009080082951E+02	1.237593714732E-01
	28	1.040735863181E+02	1.200112001388E-01
	29	1.072376627332E+02	1.164703702273E-01
	30	1.104004371868E+02	1.131357369025E-01

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L	N	MU MIN	ALPHA(MU) MIN
	1	1.349073756323E+01	1.000000000000E+00
	2	1.904007547263E+01	6.799741050700E-01
	3	2.387900607025E+01	5.649603077093E-01
	4	2.758636500722E+01	4.890364323300E-01
	5	3.113339012034E+01	4.333205445220E-01
	6	3.458514455820E+01	3.900731070739E-01
	7	3.797348050110E+01	3.552629614033E-01
	8	4.131832063259E+01	3.265074020856E-01
	9	4.462985849254E+01	3.022005363920E-01
	10	4.791629339233E+01	2.815480175659E-01
	11	5.118302404514E+01	2.635783604875E-01
	12	5.443395393600E+01	2.478368111729E-01
	13	5.767199151589E+01	2.339218259700E-01
	14	6.089935394652E+01	2.215251343237E-01
13	15	6.411776556696E+01	2.104056098015E-01
	16	6.732859020986E+01	2.003716029869E-01
	17	7.053292200661E+01	1.912686590322E-01
	18	7.373165302570E+01	1.829707732051E-01
	19	7.692551254261E+01	1.753740354443E-01
	20	8.011510890460E+01	1.683919269122E-01
	21	8.330095116317E+01	1.619517829611E-01
	22	8.648346932671E+01	1.559920950010E-01
	23	8.966302931194E+01	1.504604257379E-01
	24	9.283994459139E+01	1.453117956436E-01
	25	9.601440536426E+01	1.405073152457E-01
	26	9.918680584957E+01	1.360133191770E-01
	27	1.023573013907E+02	1.318037920972E-01
	28	1.055260569338E+02	1.278427144462E-01
	29	1.086931634073E+02	1.241176274599E-01
	30	1.118588083703E+02	1.206050534491E-01

I	L	N	MU MIN	ALPHA(MU) MIN
		1	1.449137674189E+01	1.000000000000E+00
		2	2.095598174632E+01	6.915150679621E-01
		3	2.504749246015E+01	5.785559879625E-01
		4	2.879313497696E+01	5.032327730094E-01
		5	3.237045985340E+01	4.476728724036E-01
		6	3.584712595745E+01	4.042549119108E-01
		7	3.925694492139E+01	3.691417346715E-01
		8	4.261937143785E+01	3.400185469022E-01
		9	4.594663936599E+01	3.153957931434E-01
		10	4.924693261815E+01	2.942594792360E-01
		11	5.252598359247E+01	2.758896790801E-01
		12	5.578795247537E+01	2.597501754337E-01
		13	5.903594632054E+01	2.454670010754E-01
		14	6.227234034677E+01	2.327096056404E-01
	14	15	6.549898647270E+01	2.212458165627E-01
		16	6.871735299563E+01	2.108830033299E-01
		17	7.192862082798E+01	2.014688531404E-01
		18	7.513375215204E+01	1.928743917495E-01
		19	7.833353940255E+01	1.849958122244E-01
		20	8.152864185902E+01	1.777450377296E-01
		21	8.471961208521E+01	1.710510264703E-01
		22	8.790692067983E+01	1.648490998674E-01
		23	9.109096427236E+01	1.590868738952E-01
		24	9.427086000201E+01	1.537186388967E-01
		25	9.745058135911E+01	1.487048773243E-01
		26	1.006267060236E+02	1.440112391990E-01
		27	1.038006861650E+02	1.396077163029E-01
		28	1.069727155483E+02	1.354679711729E-01
		29	1.101429677031E+02	1.315687878071E-01
		30	1.133115953539E+02	1.278896186949E-01

L	N	MU MIN	ALPHA(MU) MIN
	1	1.5491933384830E+01	1.0000000000000E+00
	2	2.2067473730809E+01	7.0202556933072E-01
	3	2.6209901840942E+01	5.9106997761028E-01
	4	2.9993133240059E+01	5.1651600507492E-01
	5	3.3600249271021E+01	4.6106602542949E-01
	6	3.7101520532970E+01	4.1755512501405E-01
	7	4.0532199931443E+01	3.8221299142492E-01
	8	4.3912611076002E+01	3.5279007567943E-01
	9	4.7255601997200E+01	3.2703273651566E-01
	10	5.0569791001176E+01	3.0634758574480E-01
	11	5.3861231583035E+01	2.8762679444020E-01
	12	5.7134330319306E+01	2.7114929497292E-01
	13	6.0392386499268E+01	2.5652129817750E-01
	14	6.3637920631135E+01	2.4343860064320E-01
15	15	6.6872932652050E+01	2.3166240166601E-01
	16	7.0098680531267E+01	2.2100087504026E-01
	17	7.3317301672291E+01	2.1129903007387E-01
	18	7.6528964042640E+01	2.0243220712056E-01
	19	7.9734810280908E+01	1.9429322436081E-01
	20	8.2935546223924E+01	1.8679405114154E-01
	21	8.6131775721908E+01	1.7986316031435E-01
	22	8.9323998735148E+01	1.7343520731504E-01
	23	9.2512649092752E+01	1.6745746162017E-01
	24	9.5698097782360E+01	1.6188339939694E-01
	25	9.8880665440206E+01	1.5667302921012E-01
	26	1.0206063071817E+02	1.5179147214570E-01
	27	1.0523823701780E+02	1.4720021845590E-01
	28	1.0841369795499E+02	1.4289645752386E-01
	29	1.1158 20102862E+02	1.3883252056025E-01
	30	1.1475891530049E+02	1.3499546718670E-01