Research Center, National Aeronautics and Space Administration, Moffett Field, California, May 1970, iv + 36 pp., 27 cm. Available from National Technical Information Service, Operations Division, Springfield, Virginia 22151. Price $3.00.

Nodes, t_{iN}, and weight coefficients, W_{iN}, are herein tabulated (Tables 1–12) to 25S (in floating-point form) for twelve Gauss quadrature formulas

$$\int_0^1 w(a, \beta, \gamma; t)f(t)\,dt = \sum_{i=1}^{N} W_{iN}f(t_{iN}) + E_N,$$

where the weight function, w, is of the form $t^{\gamma}(1 - t^{\alpha})^{\beta}$ and $N = 2(2)8(4)16, 24$. The corresponding values of the parameters α, β, γ are, respectively, $(3, \pm 1/2, 0)$, $(4, \pm 1/2, 0)$, $(6, \pm 1/2, 0)$, $(8, \pm 1/2, 0)$, $(3, \pm 1/2, \pm 1/2)$, $(2, -3/4, 0)$, and $(2, -2/3, 0)$. The coefficient k_N in the error term

$$E_n = k_N[(2N)!]^{-1}f^{(2N)}(\tau), \qquad 0 < \tau < 1,$$

is tabulated (in Table 13) to 5S for the same values of N.

The zeroth moment $M_0 = \int_0^1 w(t)\,dt$ and the coefficients b_j, g_j of the three-term recurrence relation for the monic orthogonal polynomials associated with the enumerated weight function are given to 25S in Tables 14–25, for $j = 1(1)26$.

An introduction of 11 pages contains a detailed discussion of the numerical difficulties overcome in the construction of these unique tables and of the checks that were applied to test their accuracy. Appended is a listing of a double-precision version of the algorithm used in calculating these tables. As the authors note, this computer program can be used to find additional quadrature rules of the type considered in this very useful report, which also includes a list of 16 valuable references.

J. W. W.

44[2.10].—R. PIESSENS, *Gaussian Quadrature Formulae for Integrals Involving Bessel Functions*, 30 pages of tables and 3 pages of explanatory text, reproduced on the microfiche card attached to this issue.

These tables consist of 14D values of the abscissas, x_k, and weights, A_k, in the Gaussian quadrature formula

$$\int_{j_{n,s-1}}^{j_{n,s}} J_n(x)f(x)\,dx = (-1)^{s+1} \sum_{k=1}^{N} A_k f(x_k),$$

for $n = 0, 1, 2$, $s = 1(1)20$, and $N = 2(2)8$. The limits of integration are pairs of successive zeros of $J_n(x)$, for the stated ranges of n and s.

The calculation of these tables was performed on an IBM 1620 system at the Computing Centre of the University of Leuven, using algorithms described by Golub & Welsch [1].

The authors refer to similar tables of Longman [2], which consist of 10D entries corresponding to $n = 0, 1$, $s = 1(1)20$, and $N = 16$. The present tables constitute a valuable and unique supplement to these earlier ones.

J. W. W.

1. GENE H. GOLUB & JOHN H. WELSCH, "Calculation of Gauss quadrature rules," *Math. Comp.*, v. 23, 1969, pp. 221–230.
2. I. M. LONGMAN, "Tables for the rapid and accurate numerical evaluation of certain infinite integrals involving Bessel functions," *MTAC*, v. 11, 1957, pp. 166–180.

45[2.10,7].—É. N. GLONTI, *Tablitsy Kornei i Kvadraturnykh Koeffitsientov Polinomov Iakobi (Tables of the Roots and Quadrature Coefficients of Jacobi Polynomials)*, Computing Center, Acad. Sci. USSR, Moscow, 1971, xiv + 236 pp., 27 cm. Price 2.14 rubles.

This is an extensive tabulation of the zeros $x_k^{(n)}$ and Christoffel numbers $A_k^{(n)}$ of the Jacobi polynomials $P_n(p, q, z)$ orthogonal on the interval (0, 1) with weight function $x^{q-1}(1 - x)^{p-q}$. The parameters of p, q range through the values $q = 0.1(0.1)1.0$, $p = (2q - 1)(0.1)(q + 1)$, while $n = 2(1)15$. The precision is 15S in the zeros and 15D in the coefficients. The only published table that is comparable in scope is that of Krylov et al. [1], which covers a somewhat larger region of the parameters, but is restricted to $n \leqq 8$ and a precision of only 8S.

An additional table of quadrature errors

$$e_j^{(n)} = \left| \int_0^1 x^{q-1}(1 - x)^{p-q} x^{2n+j}\, dx - \sum_{k=1}^{n} A_k^{(n)} [x_k^{(n)}]^{2n+j} \right|,$$

for $0 \leqq j \leqq 16$ and $2 \leqq n \leqq 15$, appears in the introduction. These errors grow slightly as q increases for fixed p and sharply increase with p for fixed q. Consequently, only the errors for $q = 1$, $p = 2$ and $q = 0.1$, $p = -0.8$ are tabulated, representing the largest and smallest errors, respectively, in the tabular range.

The introduction also includes a collection of formal relationships satisfied by Jacobi polynomials, comments on the computation and use of the tables, and information facilitating interpolation.

W. G.

1. V. I. KRYLOV, V. V. LUGIN & L. A. IANOVICH, *Tablitsy dlia Chislennogo Integrirovaniia Funktsii so Stepennymi Osobennostiami*, Izdat. Akad. Nauk BSSR, Minsk, 1963.

46[2.35, 6, 13.35].—JAMES W. DANIEL, *The Approximate Minimization of Functionals*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1971, xi + 228 pp., 24 cm. Price $9.50 (cloth).

This book presents the basic theory relevant to problems of approximately minimizing functionals and an analysis of some of the numerical methods available for their solution. It is an informative, useful, and very readable book. The author's exposition is clear, his prose is smooth, and the text is attractively printed. Exercises, almost all of a theoretical nature, are interspersed throughout the text, and references to nearly 200 books and papers, most of them quite recent, are well documented. Although practical methods are discussed, theoretical considerations dominate. There is little discussion of the comparative merits of these methods, although some very rough guidelines are given in an epilogue.

In Chapter 1, "Variational Problems in an Abstract Setting", basic functional analysis relevant to minimization problems is reviewed, various notions of convexity

GAUSSIAN QUADRATURE FORMULAE FOR INTEGRALS INVOLVING BESSEL FUNCTIONS

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Introduction

Many physical and technical calculations lead to integrals of the form

$$\int_0^b J_n(x)\ f(x)\ dx \qquad (1)$$

where b is finite or infinite and where $J_n(x)$ is the Bessel function of the first kind and of order n. Important examples of integrals of this type are the Fourier-Bessel coefficients. For the numerical evaluation of (1), Longman [1] has split up the integral (1) into a sum of integrals

$$\int_{j_{n,s-1}}^{j_{n,s}} J_n(x)\ f(x)\ dx \qquad (2)$$

where $j_{n,0}=0$ and $j_{n,s}$ is the s-th positive zero of $J_n(x)$. In the case $b=\infty$, Euler's transformation can be applied to speed up the convergence of the resulting series.
Longman has given tables which facilitate the evaluation of (2) using a 16-point Gauss-Legendre quadrature formula.

We here present abscissae and weights for the Gaussian quadrature formulae

$$(-1)^{s+1} \int_{j_{n,s-1}}^{j_{n,s}} J_n(x)\ f(x)\ dx \approx \sum_{k=1}^{N} A_k\ f(x_k) \qquad (3)$$

for n=0,1,2 , s=1(1)20 and N=2(2)8.
Abscissae and weights are given to 14D.

Computation of abscissae and weights

Using the method of Golub and Welsch [2], we have calculated abscissae u_k and weights B_k of the Gaussian quadrature formula

$$\int_{c}^{1} J_n(j_{n,s}\ u)\ g(u)\ du \approx \sum_{k=1}^{N} B_k\ g(u_k) \qquad (4)$$

where $c = j_{n,s-1} / j_{n,s}$

The required coefficients x_k and A_k of formula (3) are given by

$$x_k = j_{n,s}\ u_k$$
$$A_k = j_{n,s}\ B_k \qquad (5)$$

The zeros $j_{n,s}$ are given to 18D in [3].
The calculation of the moments which are necessary to the application of the method of Golub and Welsch, can be carried out according to the formula

$$\int_c^1 J_n(j_{n,s}\, u)\, u^m\, du = M_m\,(j_{n,s}) - \left(\frac{j_{n,s-1}}{j_{n,s}}\right)^{m+1} M_m\,(j_{n,s-1}) \tag{6}$$

where

$$M_m\,(j_{n,s}) = \int_0^1 J_n(j_{n,s}\, u)\, u^m\, du$$

It is known (see Luke [4]) that $M_m\,(j_{n,s})$ satisfies a recurrence relation

$$M_m\,(j_{n,s}) = -\frac{J_{n-1}(j_{n,s})}{j_{n,s}} + \frac{(m+n-1)\,(n-m+1)}{j_{n,s}^2}\, M_{m-2}\,(j_{n,s}) \tag{7}$$

To have numerical stability, (7) must be used in forward direction if $m \leq (j_{n,s}^2 + (n-1)^2)^{1/2}$. For larger values of m, backward recursion must be applied.

All calculations were carried out on the IBM-1620 computer of the Computing Centre of the University of Leuven.

References

1. I.M. Longman, Tables for the rapid and accurate numerical evaluation of certain infinite integrals involving Bessel functions, MTAC, 11, 1957, pp. 166-180
2. G.H. Golub and J.H. Welsch, Calculation of Gauss quadrature rules, Math. Comp., 23, 1969, pp. 221-230.
3. P. Detournay and R. Piessens, Zeros of Bessel Functions and Zeros of Cross Products of Bessel Functions, Report TW7, Applied Mathematics Division, University of Leuven, 1971.
4. Y.L. Luke, Integrals of Besselfunctions, McGraw-Hill, New York, 1962.

$$(-1)^{s+1} \int_{j_{0,s-1}}^{j_{0,s}} J_0(x)\, f(x)\, dx = \sum_{k=1}^{N} A_k\, f(x_k)$$

S	N	X_k	A_k
1	2	0.39882922822995	0.90108882774262
		1.56194850615902	0.56921121564155
	4	0.14473822825570	0.35943229514774
		0.68411144537350	0.60043637583620
		1.41258236533148	0.41175504216916
		2.06769209300286	0.09867633023108
	6	0.07339090660313	0.18567018912283
		0.36659942705566	0.37603006078970
		0.82318891184541	0.42592256812299
		1.35083692479061	0.31454440420181
		1.85067678032127	0.14082517927539
		2.22814702187129	0.02730764187146
	8	0.04415168227093	0.11241452816076
		0.22550464414805	0.24287219834492
		0.52500763246448	0.32298950298153
		0.90401792091887	0.32551603010775
		1.31711944274235	0.25319543981293
		1.71683415081715	0.14651481617332
		2.05706854694283	0.05660021995336
		2.29687903908346	0.01019730784960
2	2	3.24530646611014	0.41513278125292
		4.60630512173795	0.38632142981301
	4	2.76734061911444	0.09956250246132
		3.49898577507422	0.32073897309296
		4.37279061418102	0.29915508250833
		5.13210398252647	0.08199765300331
	6	2.60363513856059	0.03208896506293
		3.03465618312165	0.14210182717209
		3.62027269832971	0.24865636501633
		4.26406292205469	0.23427106072747
		4.86183849178307	0.11962902200930
		5.31032140586202	0.02470697107780
	8	2.52978116224146	0.01303915472841
		2.80933716941964	0.06552756129283
		3.21089743529117	0.14498606002447
		3.69130423851183	0.20082234285906
		4.20098241566359	0.19083206957815
		4.68768061496920	0.12484959444854
		5.09962392258045	0.05174129185413
		5.38954725618336	0.00965613628033

S	N	X_k	A_k
3	2	6.38426843763965	0.30554705223059
		7.74968824357975	0.29377546321483
	4	5.89187736904971	0.07091540555768
		6.63385715595154	0.23673297701159
		7.51099440956639	0.22785865191462
		8.26821266447014	0.06381548096153
	6	5.72325237534609	0.02240004995697
		6.16129391316855	0.10206871123038
		6.75257273027006	0.18421608589130
		7.39909800991468	0.17827947792438
		7.99712927189181	0.09291195015627
		8.44468955643414	0.01944624028612
	8	5.64742837156860	0.00899215275340
		5.93147822333563	0.04618321997435
		6.33781752060490	0.10493193224608
		6.82200146655804	0.14920037954094
		7.33399608424485	0.14506836448934
		7.82169051647855	0.09667996469727
		8.23374350921060	0.04061909281417
		8.52340121029460	0.00764740892987
4	2	9.52569539389943	0.25290464577015
		10.89211687700662	0.24614497467337
	4	9.02843698417596	0.05803185815485
		9.77370828658947	0.19607807512870
		10.65159799477811	0.19097492985179
		11.40739662056320	0.05396475730819
	6	8.85822933593985	0.01820952599728
		9.29844044062610	0.08373652403923
		9.89142987717250	0.15275858487002
		10.53857227610008	0.14934187851481
		11.13623539960997	0.07848182474293
		11.58300694550210	0.01652128227926
	8	8.78179034834599	0.00728151975845
		9.06719191811286	0.03765030398164
		9.47496966260703	0.08629345189551
		9.96023300918492	0.12383682639832
		10.47275024572454	0.12145751363792
		10.96044603179589	0.08155185089794
		11.37217010678902	0.03446410661859
		11.66142998535677	0.00651404725517

S	N	X_k	A_k
5	2	12.66734968101222	0.22052500469567
		14.03415140098986	0.21601010762881
	4	12.16765264939948	0.05030875592729
		12.91452128672628	0.17102093190601
		13.79269637533593	0.16761063756418
		14.54760869995916	0.04759478692700
	6	11.99666885176896	0.01573409732540
		12.43791810882215	0.07268001136442
		13.03171245495085	0.13331267015135
		13.67908886058116	0.13102864501679
		14.27645683492945	0.06917119460953
		14.72271428267796	0.01460849385700
	8	11.91993248266430	0.00627956828219
		12.20597231220889	0.03257609120865
		12.61442638053717	0.07498787782526
		13.10018069313495	0.10812195195439
		13.61289609740387	0.10653110440897
		14.10051109766581	0.07182012928850
		14.51198019130551	0.03045023937364
		14.80096349330559	0.00576814998289
6	2	15.80902564059889	0.19805455434352
		17.17601141345626	0.19476800493725
	4	15.30786487953550	0.04502350662653
		16.05567302135838	0.15361668147030
		16.93398619784171	0.15113357031579
		17.68830328285757	0.04304880086815
	6	15.13642098884404	0.01405328663747
		15.57827573204508	0.06509025468484
		16.17253388942674	0.11978566069494
		16.82002351545568	0.11812235292132
		17.41717445715894	0.06253637918502
		17.86308006273045	0.01323462515716
	8	15.05950981368121	0.00560231358595
		15.34591884104648	0.02911907909493
		15.75476259001626	0.06720417373053
		16.24079326390014	0.09717738431837
		16.75360454739527	0.09601876464529
		17.24114171833230	0.06489799629382
		17.65242511277094	0.02757239530829
		17.94121420567474	0.00523045230359

S	N	X_k	A_k
7	2	18.95069293692949	0.18129311957081
		20.31778158488716	0.17876371696218
	4	18.44855639773336	0.04111567955638
		19.19698209584964	0.14062810409420
		20.07537244138803	0.13871677042572
		20.82926442014468	0.03959628245668
	6	18.27680830492153	0.01281660649542
		18.71905879639375	0.05946808502181
		19.31361738531078	0.10968150556042
		19.96117028084584	0.10840109081179
		20.55815873474435	0.05750269993294
		21.00381035772162	0.01218684871061
	8	18.19978220452049	0.00510541816158
		18.48643117448062	0.02657033628169
		18.89552736331855	0.06142786519298
		19.38173398626847	0.08899629112677
		19.89459884841946	0.08810433878438
		20.38207103410535	0.05965286582986
		20.79321601151989	0.02538031641742
		21.08186294677337	0.00481940473830
8	2	22.09234815442154	0.16817256811429
		23.45950007652645	0.16614841155441
	4	21.58951474491165	0.03807526678906
		22.33837694363783	0.13045791960261
		23.21681474754707	0.12892823777574
		23.97038860267225	0.03685955550129
	6	21.41755066869660	0.01185766637526
		21.86007973944828	0.05508842203252
		22.45484834836810	0.10176507555244
		23.10244015322938	0.10074027711257
		23.69930343353495	0.05351568758588
		24.14476366884041	0.01135385101004
	8	21.34044330350925	0.00472086271001
		21.62726047366750	0.02459129399462
		22.03653316165274	0.05692259675168
		22.52286116086941	0.08258341142634
		23.03575897258349	0.08186950152772
		23.52317802965495	0.05550209644031
		23.93421664169045	0.02363914836556
		24.22275551164581	0.00449206845247

S	N	X_k	A_k
9	2	25.2339927326861 6	0.15754118453908
		26.60118632705126	0.15587388765267
	4	24.73063677087437	0.03562263034497
		25.47982369753300	0.12221558119087
		26.35829275534542	0.12095550945848
		27.11161984920106	0.03462135119743
	6	24.55851144692037	0.01108600943502
		25.00124712039390	0.05155229612466
		25.59617063122067	0.09534650116028
		26.24378805958970	0.09450229621592
		26.84055231896436	0.05025687161388
		27.28586337476252	0.01067109764199
	8	24.48134359830344	0.00441184796767
		24.76828511248740	0.02299719635962
		25.17768800092031	0.05328182745973
		25.66410458242701	0.07738206960230
		26.17702409284353	0.07679395490115
		26.66439951480252	0.05211173185917
		27.07535411767476	0.02221300597223
		27.36380824480785	0.00422343806988
	2	28.37562870727189	0.14870012351381
		29.74285119456903	0.14729588281354
	4	27.87186639284432	0.03358996228250
		28.62130425919489	0.11536031682743
		29.49979498551987	0.11429900882027
		30.25292519862849	0.03274671839715
	6	27.69961610461560	0.01044768228852
		28.14251104595197	0.04861970607989
		28.73755343642115	0.09000635416997
		29.38518862953618	0.08929529678124
		29.98187275421764	0.04752868708186
		30.42706435531633	0.01009827992586
	8	27.62240149548652	0.00415650052551
		27.90943862266694	0.02167755635993
		28.31894144990923	0.05026042620253
		28.80542543237927	0.07305348762797
		29.31835998645035	0.07255812278884
		29.80569917069343	0.04927492375477
		30.21658586149600	0.02101714432702
		30.50497183097916	0.00399784474078

S	N	X_k	A_k
11	2	31.51725785106629	0.14119753919939
		32.8845011899 6761	0.13999377979067
	4	31.01317051178295	0.03186966686218
		31.76280807633665	0.10954230849969
		32.64131444000777	0.10863249527239
		33.39428396934832	0.03114684835579
	6	30.84082054215471	0.00990824837333
		31.28384198048343	0.04613649249901
		31.87897844126911	0.08547306947701
		32.52662645443758	0.08486350015441
		33.12324447075985	0.04520124969358
		33.56833830718896	0.00960875879272
	8	30.76356870560441	0.00394089551308
		31.05068161636360	0.02056171820028
		31.46026353782896	0.04770066479342
		31.94680047598937	0.06937816187598
		32.45974588641141	0.06895349515499
		32.94705460487474	0.04685585015758
		33.35788531498511	0.01999562525492
		33.64621531416330	0.00380490803981
12	2	34.65888156345639	0.13472662155254
		36.02614044203718	0.13367979351934
	4	34.15452833731468	0.03038916007488
		34.90432857918431	0.10452393877827
		35.78284659633066	0.10373271863411
		36.53568252438770	0.02976059758461
	6	33.98209700522263	0.00944455933228
		34.42522132345713	0.04399851779499
		35.02043405380653	0.08156205810838
		35.66809162085895	0.08103193847647
		36.26465420645689	0.04318520894838
		36.70966657563559	0.00918413241139
	8	33.90481483129648	0.00375569151752
		34.19198927174666	0.01960211670275
		34.60163532939656	0.04549585222681
		35.08821494482190	0.06620680906884
		35.60116844570870	0.06583748939234
		36.08845124744824	0.04476116711366
		36.49923504692246	0.01910984543957
		36.78751828181799	0.00363744361039

S	N	X_k	A_k
13	2	37.80050092119639	0.12907076167884
		39.16777168991609	0.12814949864493
	4	37.29592615464303	0.02909746540654
		38.04586146246642	0.10013740375409
		38.92438839607673	0.09944107735721
		39.67711150589790	0.02854431380592
	6	37.12342715647295	0.00904040420722
		37.56663677697008	0.04213256633145
		38.16191257816290	0.07814289465164
		38.80957745518277	0.07767634940444
		39.40609291480581	0.04141681802199
		39.85103636547099	0.00881122770702
	8	37.04611978586374	0.00359435730137
		37.33334517000380	0.01876540266059
		37.74304427142092	0.04357089784134
		38.22965899738486	0.06343390411980
		38.74261868853304	0.06310887299390
		39.22987920396943	0.04292433205256
		39.64062313984798	0.01833219281854
		39.92886672849125	0.00349030053567
14	2	40.94211675081384	0.12407209476309
		42.30939681960116	0.12325315648410
	4	40.43735455131309	0.02795759092071
		41.18740378643344	0.09626038234526
		42.06593769410744	0.09564138892298
		42.81856427821866	0.02746588905824
	6	40.26479839490895	0.00868404681562
		40.70807988439713	0.04048546168635
		41.30340870260170	0.07512046402552
		41.95107929713725	0.07470572934448
		42.54755421134598	0.03984921556875
		42.99243860779064	0.00848033380647
	8	40.18746976460965	0.00345217077849
		40.47473801724022	0.01802740945078
		40.88448171197083	0.04187121615560
		41.37112582046678	0.06098246391232
		41.88409035334701	0.06069352662634
		42.37133151690973	0.04129646118611
		42.78204116862028	0.01764232629460
		43.07025072508895	0.00335967684295

S	N	X_k	A_k
15	2	44.08372969074906	0.11961248816127
		45.45101717066663	0.11887824062196
	4	43.57880685319733	0.02694195468657
		44.32895347483008	0.09280132480351
		45.20749294000540	0.09224633901341
		45.96003600485970	0.02650111027973
	6	43.40620177599013	0.00836675357384
		43.84954463902730	0.03901752589104
		44.44491864161397	0.07242355308138
		45.09259379232016	0.07205170212761
		45.68903346067265	0.03844708018926
		46.13386669549959	0.00818411392009
	8	43.32885496767924	0.00332562188731
		43.61615978965466	0.01737013911394
		44.02594149343741	0.04035604852803
		44.51261054625404	0.05879483402036
		45.02557893740522	0.05853577198489
		45.51280314995367	0.03984072965618
		45.92348300790277	0.01702488661249
		46.21166303650272	0.00324269698003
16	2	47.22534023890692	0.11560154584750
		48.59263372000153	0.11493833476216
	4	46.72027819637551	0.02602951539568
		47.47050901929309	0.08969016726580
		48.34905298462697	0.08918887063552
		49.10152307730222	0.02563132731267
	6	46.54763077533050	0.00808187301810
		46.99102665666697	0.03769847165992
		47.58643962392413	0.06999764542834
		48.23411846395930	0.06966176552361
		48.83052721540486	0.03718321710624
		49.27531570104383	0.00791690787345
	8	46.47026824625400	0.00321203991001
		46.75760462984200	0.01677987538405
		47.16741911366697	0.03899426387977
		47.65410960349666	0.05682686696341
		48.16708111886209	0.05659286461372
		48.65429036698918	0.03852879899031
		49.06494409726677	0.01646803036950
		49.35309826603017	0.00313714049888

S	N	X_k	A_k
17	2	50.36694878775682	0.11196876123906
		51.73424719632177	0.11136582731989
	4	49.86176495247570	0.02520390459575
		50.61206929746734	0.08687225577037
		51.49061695778330	0.08641651727118
		52.24302274846944	0.02484191092165
	6	49.68908052215402	0.00782423824724
		50.13252266237901	0.03650472575350
		50.72796957381771	0.06780020422236
		51.37565144307567	0.06749484800992
		51.97203285824481	0.03603630261331
		52.41678187461692	0.00767426971261
	8	49.61170426311484	0.00310935190783
		49.89906816202427	0.01624595735188
		50.30891120467726	0.03776161965959
		50.79562031261410	0.05504410912266
		51.30859439319311	0.05483137162445
		51.79579033773806	0.03733845812126
		52.20642097135860	0.01596245886106
		52.49455230640147	0.00304126191021
18	2	53.50855565000498	0.10865822313641
		54.87585815400436	0.10810695805752
	4	53.00326435982878	0.02445217196416
		53.75363345685734	0.08430424619761
		54.63218418821542	0.08388756013872
		55.38453289010897	0.02412120289343
	6	52.83054730669892	0.00758976641987
		53.27403016048350	0.03541762929510
		53.86950690561117	0.06579748760072
		54.51719129256975	0.06551829653659
		55.11354836617720	0.03498934917895
		55.55826231212986	0.00745265216269
	8	52.75315895300612	0.00301592102068
		53.04054705127492	0.01575995673218
		53.45041519631185	0.03663891858606
		53.93714062327266	0.05341922562597
		54.45011683589909	0.05322471662407
		54.93730087855071	0.03625201919417
		55.34791094964519	0.01550075581611
		55.63602197637697	0.00295366759468

S	N	X_k	A_k
19	2	56.650161077407 99	0.10562494785578
		58.017467022116 76	0.10511837129066
	4	56.144774279294 85	0.02376391920036
		56.895200838260 46	0.08195126310922
		57.773754149689 66	0.08156835402221
		58.526051827812 38	0.02345978281465
	6	55.972028253786 12	0.00737518284771
		56.415547215763 61	0.03442219456076
		57.011050386987 57	0.06396234108687
		57.658736889136 80	0.06370578077327
		58.255072150772 45	0.03402863404519
		58.699754729513 77	0.00724918583263
	8	55.894629165129 50	0.00293043520411
		56.182038711541 16	0.01531511064551
		56.591929093330 79	0.03561073441574
		57.078668939999 41	0.05193021469526
		57.591646943817 90	0.05175147194781
		58.078820277734 50	0.03525519841724
		58.489411926168 04	0.01507692424686
		58.777504773734 06	0.00287322957391
20	2	59.791765274656 34	0.10283227840756
		61.159074137824 77	0.10236466249374
	4	59.286293028226 23	0.02313068786328
		60.036770923883 73	0.07978488481588
		60.915326423757 76	0.07943142370913
		61.667578226150 50	0.02284994451301
	6	59.113521100647 12	0.00717782632566
		59.557072304476 93	0.03350622571023
		60.152599045683 69	0.06227263146886
		60.800287341959 35	0.06203580158193
		61.396602947384 91	0.03314293452789
		61.841257305638 73	0.00706152128672
	8	59.036112419702 65	0.00285182879892
		59.323541106516 68	0.01490592110933
		59.733451322985 24	0.03466451012963
		60.220204002434 12	0.05055914052069
		60.733183525565 39	0.05039414350098
		61.220347174407 82	0.03433631771129
		61.630922223335 77	0.01468605535529
		61.918998703271 04	0.00279902377518

$$(-1)^{s+1} \int_{j_{1,s-1}}^{j_{1,s}} J_1(x)\, f(x)\, dx \approx \sum_{k=1}^{N} A_k\, f(x_k)$$

S	N	X_k	A_k
1	2	1.06490359717708	0.71352730570934
		2.72131533209114	0.68923208999321
	4	0.45894552032648	0.16288779170304
		1.36622668450166	0.55523923260296
		2.43260541628559	0.53670441517958
		3.35654135706968	0.14792795621698
	6	0.25050630522870	0.05081720068574
		0.78800957908357	0.23625182964311
		1.50976003202129	0.43333579777075
		2.29683537470147	0.42085764350012
		3.02585792001862	0.21694128204246
		3.57417420884993	0.04455564206039
	8	0.15682331770170	0.02024226700548
		0.50569474413235	0.10565639958157
		1.00301791830541	0.24426855346537
		1.59383568463673	0.35160778001875
		2.21766918296365	0.34288843027054
		2.81224795846689	0.22683437609859
		3.31591277526150	0.09387426764509
		3.67129809520792	0.01738732161716
2	2	4.70332406638757	0.36020958440536
		6.09178045076188	0.34266556382333
	4	4.20697213576599	0.08452497234615
		4.95884539269611	0.27885106483800
		5.85061361925253	0.26565579559800
		6.62216816583074	0.07384331544654
	6	4.03701532863946	0.02688456826219
		4.48055760313[illegible]	0.12131514008113
		5.08058729933[illegible]	0.21673774909876
		5.73780700902665	0.20792281351893
		6.34649495226934	0.10760573369767
		6.80247437188872	0.02240914357000
	8	3.96051332776246	0.01083815916324
		4.24813692263017	0.05524510276883
		4.66018449066159	0.12440793674340
		5.15181848941217	0.17538408254399
		5.67223448864598	0.16925351380240
		6.16835314072349	0.11209339680686
		6.58779860890087	0.04686096060493
		6.88280794910309	0.00879199579503

S	N	X_k	A_k
3	2	7.89046436064263	0.27929007805562
		9.26593924270673	0.27053055152835
	4	7.39170757475265	0.06437798706407
		8.14083657782799	0.21647998141399
		9.02449927572835	0.20987160088239
		9.78609188765246	0.05909106022352
	6	7.22096254355460	0.02025527744530
		7.66335365547810	0.09279911613778
		8.25977427800549	0.16857713151624
		8.91114809828879	0.16415447941316
		9.51308869985421	0.08597894317765
		9.96327758753308	0.01805568189385
	8	7.14424491000703	0.00811251439736
		7.43107797892434	0.04183104639714
		7.84110840671306	0.09554120544721
		8.32930560139514	0.13661165961795
		8.84516100718880	0.13353256077320
		9.33622755835058	0.08939338678600
		9.75093437676105	0.03768702234580
		10.04236560288399	0.00711123381932
4	2	11.05084529773110	0.23676807430746
		12.42249393588882	0.23129620999826
	4	10.55035622095976	0.05414829320833
		11.29928685896219	0.18359692781534
		12.18055857148761	0.17946503614699
		12.93861358759833	0.05085402713506
	6	10.37908011859982	0.01695913597148
		10.82150370244048	0.07818625893186
		11.41713545871110	0.14308201053225
		12.06678478862178	0.14031521325320
		12.66646552337644	0.07393029885625
		13.11458128752893	0.01559136676067
	8	10.30219121871710	0.00677416882182
		10.58900558742281	0.03509158580382
		10.99867021695616	0.08062834049676
		11.48599827763724	0.11602315344840
		12.00050849696499	0.11409625089018
		12.48994348508737	0.07678795219881
		12.90302980069295	0.03251050711382
		13.19319401204113	0.00615232553210

S	N	x_k	A_k
5	2	14.20277575787670	0.20932709575021
		15.57278234669750	0.20549768296632
	4	13.70112431857185	0.04766032511259
		14.45021713135490	0.16234994271852
		15.33046246515310	0.15945714382099
		16.08675319295981	0.04535736706443
	6	13.52949639069419	0.01488951030566
		13.97208609997972	0.06888063176443
		14.56749001389021	0.12657727157124
		15.21639905736028	0.12463972955381
		15.81499974221485	0.06590347471404
		16.26207430983887	0.01393416080735
	8	13.45248887959130	0.00593874108096
		13.73938383955387	0.03084074327811
		14.14898409753593	0.07109560171501
		14.63599699814604	0.10267500393337
		15.14992977616329	0.10132543478276
		15.63860690099289	0.06840794646009
		16.05090580018212	0.02903667495063
		16.34043785377379	0.00550463251559
6	2	17.35092698812979	0.18970022603913
		18.72007909266465	0.18682852077385
	4	16.84845641421354	0.04306844803306
		17.59775963504003	0.14714383408084
		18.47747079871647	0.14497405293578
		19.23271769201442	0.04134241176329
	6	16.67658172662086	0.01343342354605
		17.11933575546043	0.06227939121373
		17.71467737446271	0.11475217786061
		18.36320113828653	0.11329871660107
		18.96118363320837	0.06004731238130
		19.40763867169557	0.01271772521021
	8	16.59948923636146	0.00535299867118
		16.88647163799561	0.02784242428785
		17.29608559649272	0.06431831673959
		17.78296386349010	0.09310317720664
		18.29659611815122	0.09209071288486
		18.78484953629112	0.06230281824724
		19.19669163304717	0.02649042164153
		19.48584926786576	0.00502787713408

S	N	x_k	A_k
7	2	20.49705609254248	0.17475207549155
		21.86570708211134	0.17249590032658
	4	19.99398053248468	0.03959583052434
		20.74348029993656	0.13555842622704
		21.62287817660110	0.13385351508517
		22.37743984467512	0.03824020398158
	6	19.82192401691780	0.01233660018250
		20.26481970960968	0.05727979784184
		20.86015741744453	0.10573634858524
		21.50845521617976	0.10459420313855
		22.10604258494835	0.05552638570997
		22.55208904972942	0.01177464036003
	8	19.74476811507798	0.00491278291276
		20.03182831136635	0.02558017938988
		20.44147770693811	0.05917797109355
		20.92829403483559	0.08580114417808
		21.44175003491934	0.08500550408386
		21.92973796290051	0.05759447758928
		22.34128481088701	0.02451837472683
		22.63019636639549	0.00465754184389
8	2	23.64197518735555	0.16287132172503
		25.01030720168835	0.16103826500164
	4	23.13843560033686	0.03684978107070
		23.88810677164586	0.12634823622064
		24.76730522318109	0.12496295316161
		25.52138446156331	0.03574861627373
	6	22.96623980339104	0.01147170536422
		23.40925437141132	0.05332217813855
		24.00461021948335	0.09856537148592
		24.65276417798326	0.09763730588612
		25.25007942029145	0.05189771924356
		25.69583713211917	0.01101530660830
	8	22.88903492024681	0.00456621576717
		23.17616145090228	0.02379425431259
		23.58585074728766	0.05510478219379
		24.07263840699840	0.07999093944177
		24.58598221103153	0.07934441339498
		25.07379039253687	0.05381825203434
		25.48513197940088	0.02293178787179
		25.77387008740123	0.00435894171025

S	N	X_k	A_k
9	2	26.78611221271032	0.15313179756883
		28.15422866549673	0.15160429865680
	4	26.28220585457282	0.03460723676223
		27.03202403391981	0.11879676395095
		27.91108771152571	0.11764233740114
		28.66480976707720	0.03368975811131
	6	26.10990005723056	0.01076688598109
		26.55301430195048	0.05008775471199
		27.14839629396918	0.09268370490406
		27.79645304325782	0.09191027614112
		28.39357050514045	0.04890081182288
		28.83911374621965	0.01038666266449
	8	26.03265625881287	0.00428413438669
		26.31983895600518	0.02233764069481
		26.72956689705462	0.05177338320979
		27.21634242204669	0.07522395684573
		27.72961040264892	0.07468514657999
		28.21728987533060	0.05070130763060
		28.62848107588203	0.02161905935282
		28.91709063323064	0.00411146752520
10	2	29.92971433767791	0.14495762654666
		31.29767830146744	0.14365928161010
	4	29.42551097627073	0.03273072785073
		30.17545514982937	0.11245824543205
		31.05442348611501	0.11147696846477
		31.80787087615724	0.03195096640921
	6	29.25311615074587	0.01017807839474
		29.69631456349030	0.04737968511760
		30.29172484542490	0.08774539098734
		30.93971282718667	0.08708795203744
		31.53668058576039	0.04637084753524
		31.98205845709385	0.00985495408441
	8	29.17584071536247	0.00404870526944
		29.46307115348347	0.02111999343935
		29.87283467507896	0.04898248478792
		30.35960672221288	0.07122061846096
		30.87282106407263	0.07076260655079
		31.36040438228614	0.04807124034347
		31.77148095967056	0.02050928389283
		32.05999157242079	0.00390197541200

S	N	X_k	A_k
11	2	33.07293439010022	0.13796915895496
		34.44078651871712	0.13684787953902
	4	32.56848570767936	0.03113025287759
		33.31853839313401	0.10703868911058
		34.19743680532443	0.10619121353210
		34.95066665192012	0.03045688297371
	6	32.39601737351183	0.00967654441320
		32.83928751727454	0.04506890504827
		33.43472571740958	0.08352209602283
		34.08266326445098	0.08295429232390
		34.67951406194809	0.04419767669363
		35.12476065115589	0.00939752399216
	8	32.31871572514054	0.00384832289107
		32.60598704360893	0.02008229413986
		33.01578269562095	0.04659991671221
		33.50255592952149	0.06779629397443
		34.01573093229943	0.06740072354815
		34.50323999403220	0.04581294542073
		34.91422647328121	0.01955491674542
		35.20265865358104	0.00372162506212
12	2	36.21587198611030	0.13190448482213
		37.58363966216580	0.13092337755995
	4	35.71121730394508	0.02974406667167
		36.46136408154340	0.10233521745797
		37.34020968988606	0.10159367031623
		38.09326311102544	0.02915490793620
	6	35.53868726025435	0.00924262853210
		35.98201911786795	0.04306676726455
		36.57748380775512	0.07985616140234
		37.22538326850223	0.07935932291605
		37.82214033617590	0.04230446919747
		38.26728024256537	0.00899851306956
	8	35.46136354505399	0.00367506350356
		35.74867016164001	0.01918412571919
		36.15849462948662	0.04453479500185
		36.64527157775997	0.06482344215162
		37.15841687325561	0.06447730832406
		37.64586704212707	0.04384620341488
		38.05678093222201	0.01872270589840
		38.34514945718403	0.00356421836852

S	N	X_k	A_k
13	2	39.35859485261642	0.12657623852276
		40.72629719412573	0.12570834431915
	4	38.85376476741806	0.02852819888671
		39.60399372728105	0.09820266237163
		40.48279848497979	0.09754667425175
		41.23570603004174	0.02800704733182
	6	38.68118219050590	0.00886236852439
		39.12456762502793	0.04131008456351
		39.72005698686985	0.07663472324118
		40.36792698289473	0.07619520525900
		40.96460736056206	0.04063576227012
		41.40965890165334	0.00864643898370
	8	38.60383964694296	0.00352330652749
		38.89117699403287	0.01839674855532
		39.30102727328779	0.04272227825750
		39.78780927290001	0.06221072535963
		40.30093158595251	0.06190452340985
		40.78833401622618	0.04211314522500
		41.19918823147534	0.01798859370928
		41.48750408829036	0.00342526179783
14	2	42.50115065095921	0.12184633620617
		43.86880141051006	0.12107143657435
	4	41.99616943060349	0.02745036765720
		42.74647068226595	0.09453401933269
		43.62524318798194	0.09394831275902
		44.37802815541159	0.02698507303161
	6	41.82354159580227	0.00852553503330
		42.26697393263323	0.03975243080424
		42.86248606970250	0.07377455720266
		43.51033280302867	0.07338212548942
		44.10694933727586	0.03915037023234
		44.55192651085262	0.00833275401856
	8	41.74618280052668	0.00338893896746
		42.03354711080345	0.01769908890650
		42.44342054450037	0.04111468852096
		42.93020825010044	0.05989077170782
		43.44331241828887	0.05961737242872
		43.93067544085729	0.04057082374659
		44.34147976671489	0.01733468201386
		44.62975134058122	0.00330140648862

S	N	x_k	A_k
15	2	45.64357390004278	0.11761045576331
		47.01118322358923	0.11691305036754
	4	45.13846111222209	0.02648626271035
		45.88882638416447	0.09124843497762
		46.76757298160521	0.09072129696925
		47.52025353441799	0.02606751147363
	6	44.96579388399654	0.00822443828315
		45.40926759375085	0.03835882163030
		46.00480067270101	0.07121275848086
		46.65262871890762	0.07085956636527
		47.24919132118055	0.03781697644586
		47.69410505922681	0.00805094492541
	8	44.88842092006103	0.00326887204448
		45.17580905916471	0.01707529365688
		45.58570332185360	0.03967607503203
		46.07249699019568	0.05781264524468
		46.58558658247688	0.05756658251072
		47.07291656964095	0.03918659963432
		47.48367859046948	0.01674733980200
		47.77191242253808	0.00319009820576
16	2	48.78589021662078	0.11378810573026
		50.15346575301652	0.11315608524912
	4	48.28066186653750	0.02561717897082
		49.03108418883850	0.08828351821023
		49.90980966044582	0.08780579784484
		50.66240022544993	0.02523769595350
	6	48.10796004051998	0.00795317046085
		48.55147049871203	0.03710232425177
		49.14702281067104	0.06890077307378
		49.79483561923223	0.06858069007839
		50.39135208833354	0.03661128394850
		50.83621108813131	0.00779594916609
	8	48.03057461557192	0.00316073479345
		48.31798395313777	0.01651317602561
		48.72789701662815	0.03837874584599
		49.21469667094557	0.05593702165557
		49.72777437789669	0.05571402480122
		50.21507630391176	0.03793516090553
		50.62580201242936	0.01621597696647
		50.91400330138187	0.00308934998556

S	N	x_k	A_k
17	2	51.92811901262204	0.11031604869548
		53.29566663730247	0.10973979710742
	4	51.42278835679352	0.02482845627094
		52.17326181204774	0.08559024723172
		53.05196983145582	0.08515467749973
		53.80448205394907	0.02448246480050
	6	51.25005590426661	0.00770710736133
		51.69359920863740	0.03596182006161
		52.28916919013400	0.06680044242879
		52.93696941076580	0.06650860006179
		53.53344598807254	0.03551411203770
		53.97825728035036	0.00756376385168
	8	51.17265943539115	0.00306267277997
		51.46008774554217	0.01600319213795
		51.87001784072271	0.03720097680732
		52.35682336815282	0.05423299013317
		52.86989125655439	0.05402966758820
		53.35716907309136	0.03679653332719
		53.76786328369924	0.01573222339700
		54.05603622822478	0.00299758963209
18	2	55.07027526735835	0.10714381656885
		56.43779956814002	0.10661558777007
	4	54.56485340799734	0.02410841935482
		55.31537293591134	0.08312949584257
		56.19406637168034	0.08273022269723
		56.94650978450983	0.02379126644430
	6	54.39209365435467	0.00748257052126
		54.83566648468894	0.03492048346724
		55.43125271920927	0.06488130462111
		56.07904242094546	0.08461378092798
		56.67548417567861	0.03451008842391
		57.12025352347755	0.00735117637741
	8	54.31468733035039	0.00297321180421
		54.60213271476071	0.01553774661327
		55.01207829547076	0.03612545274054
		55.49888950590482	0.05267587054703
		56.01194918959737	0.05248949010361
		56.49920608427126	0.03575471411722
		56.90987272100713	0.01528936386314
		57.19802075989611	0.00291355454990

S	N	x_k	A_k
19	2	58.21237072491146	0.10423057380280
		59.57987533639628	0.10374404869583
	4	57.70686705212284	0.02344763892360
		58.45742829563067	0.08086960341586
		59.33610942032654	0.08050185114200
		60.08849192380959	0.02315552901718
	6	57.53408280957620	0.00727659210551
		57.97768231920183	0.03396472072363
		58.57328352961525	0.06311870576120
		59.22106435161173	0.06287230117520
		59.81747545466850	0.03358672838255
		60.26220763991821	0.00715557435054
	8	57.45666763737980	0.00289116314638
		57.74412846518473	0.01511070896374
		58.15408817602479	0.03513817927872
		58.64090483810609	0.05124568551743
		59.15395759563375	0.05107401819916
		59.64119617451871	0.03479671045777
		60.05183847658487	0.01488193947279
		60.33996446108795	0.00283621746263
20	2	61.35441472313654	0.10154287426056
		62.72190256204669	0.10109283965436
	4	60.84883724934118	0.02283840474280
		61.59943643269268	0.07878463692706
		62.47810707002704	0.07844446552809
		63.23043528330407	0.02256820671697
	6	60.67603091724635	0.00708674753112
		61.11965464822981	0.03308341284968
		61.71526968539366	0.06149244886718
		62.36304294305720	0.06126452369186
		62.95942686578161	0.03273377237188
		63.40412589942178	0.00697480860319
	8	60.59860775720813	0.00281555617783
		60.88608261787253	0.01471706911980
		61.29605526653612	0.03422770608289
		61.78287712985785	0.04992606705931
		62.29592398722686	0.04976727390485
		62.78314640639017	0.03391184817840
		63.19376707780948	0.01450546056398
		63.48187339781834	0.00276473282787

$$(-1)^{s+1} \int_{j_{2,s-1}}^{j_{2,s}} J_2(x)\, f(x)\, dx \approx \sum_{k=1}^{N} A_k\, f(x_k)$$

S	N	x_k	A_k
1	2	1.83557559386286	0.63354307439217
		3.84562939480103	0.74007473113547
	4	0.89030008436721	0.09998840342473
		2.11598420590046	0.50062791562582
		3.44125395917942	0.59386256293280
		4.56068947413491	0.17913892354430
	6	0.51569196206427	0.02108053942818
		1.29127404479050	0.15978363670852
		2.24009408549737	0.39999918721029
		3.23358862993870	0.46840746060974
		4.13838445746304	0.26708110900833
		4.81642281505437	0.05726587256258
	8	0.33412894838105	0.00590759717632
		0.85835681836614	0.05300229809476
		1.53847546771988	0.17815399544911
		2.31049322863400	0.33072783510314
		3.10618871812769	0.38126080135927
		3.85549921456657	0.27936941019601
		4.48755967295445	0.12207101680667
		4.93378624790561	0.02312485134237
2	2	6.04108929268297	0.33399899927855
		7.47112430655471	0.32184046664168
	4	5.52494751073982	0.07745525080710
		6.30242690369448	0.25877443696103
		7.22103313105769	0.24962089061447
		8.01361532147904	0.06998888753763
	6	5.34833637257170	0.02447251879291
		5.80720777619558	0.11146104143152
		6.42666996004173	0.20139690539053
		7.10374903779758	0.19527872883486
		7.72981132703964	0.10190026166770
		8.19835074170119	0.02133000980271
	8	5.26894779377374	0.00982780921031
		5.56643899066389	0.05043131991642
		5.99211807297228	0.11459507190869
		6.49931661539005	0.16313744662924
		7.03550222501068	0.15888071985094
		7.54610911097531	0.10601789488111
		7.97748775268141	0.04456142048342
		8.28076577076926	0.00838778304008

S	N	X_k	A_k
3	2	9.30732384056833	0.26327643030934
		10.70199064367538	0.25638480165527
	4	8.79967849611624	0.06040004252111
		9.56045163664055	0.20411838944614
		10.45648017355947	0.19891835157081
		11.22778466478286	0.05622444842656
	6	8.62595296645366	0.01895420388451
		9.07528699065097	0.08714903137893
		9.68058617347766	0.15902810923306
		10.34109702721271	0.15554772114568
		10.95104663144022	0.08176905714237
		11.40700677800949	0.01721310918007
	8	8.54794050668571	0.00758007452677
		8.83924028621130	0.03918485450639
		9.25547460293179	0.08981112984530
		9.75079590304641	0.12892363008989
		10.27389939066624	0.12650035981811
		10.77163472773463	0.08496502625995
		11.19182698174883	0.03590957850489
		11.48704801871993	0.00678657841332
4	2	12.50594523866158	0.22566006845203
		13.88874743202553	0.22109119643196
	4	12.00035464567996	0.05147618052582
		12.75600601273691	0.17500294335728
		13.64445883206654	0.17155284993932
		14.40816177038954	0.04871929106158
	6	11.82736930211663	0.01609975841496
		12.27379381056635	0.07436495988163
		12.87456110779089	0.13641862206639
		13.52951318558302	0.13410837242060
		14.13384718249212	0.07080599750631
		14.58531105820107	0.01495355459410
	8	11.74973718539678	0.00642577201863
		12.03912530262745	0.03333139164060
		12.45237239641464	0.07672665017382
		12.94382475541785	0.11064249535649
		13.46253962102757	0.10903352366123
		13.95584643278424	0.07351670401993
		14.37211573295908	0.03117044660608
		14.66447572677423	0.00590428140723

S	N	x_k	A_k
5	2	15.68071476003226	0.20103568278310
		17.05803150517749	0.19772291474177
	4	15.17574410719367	0.04569936910067
		15.92922404117540	0.15592880252866
		16.81417394826207	0.15342632428578
		17.57416839412833	0.04370410160975
	6	15.00300445092219	0.01426448657254
		15.44820365136678	0.06606663797629
		16.04696412274400	0.12158945897911
		16.69934594150262	0.11991337596175
		17.30099632230282	0.06348861912496
		17.75026331670232	0.01343601891023
	8	14.92551325039795	0.00568662550560
		15.21408685970514	0.02955591211807
		15.62602641071322	0.06821241621722
		16.11573632675523	0.09864140964480
		16.63242205569585	0.09747395616845
		17.12363562260706	0.06588584736729
		17.53801907937861	0.02799244618802
		17.82898786268005	0.00530998431541
6	2	18.84411176157675	0.18320427655247
		20.21843069408089	0.18066050563954
	4	18.33930648523096	0.04154814113199
		19.09170227851008	0.14211052069478
		19.97473772712297	0.14018856354379
		20.73260353441189	0.04001755682144
	6	18.16664993496016	0.01295153748702
		18.61124248481992	0.06009321665769
		19.20895216673294	0.11083816548702
		19.85992926127910	0.10955073910208
		20.46006735561648	0.05811466114161
		20.90807119176827	0.01231646231659
	8	18.08921713171157	0.00515922768928
		18.37738224985046	0.02684965890746
		18.78864560425927	0.06207368048059
		19.27742728726571	0.08993516891145
		19.79300404772537	0.08903836683021
		20.28304975175115	0.06028753601693
		20.69636456010225	0.02565051675093
		20.98653660794059	0.00487062660515

S	N	X_k	A_k
7	2	22.00115999024791	0.16948417437162
		23.37365854732550	0.16745142752071
	4	21.49635183580416	0.03837165142133
		22.24815017526072	0.13147535353941
		23.13002306050035	0.12993931677095
		23.88653561300444	0.03714928016065
	6	21.32371513854012	0.01195003902469
		21.76797683727839	0.05551703251120
		22.36507565527230	0.10255900744921
		23.01519972694387	0.10153001324188
		23.61439238180328	0.05393644519919
		24.06159179560733	0.01144306446617
	8	21.24630662949607	0.00475767351124
		21.53424559460690	0.02478263020718
		21.94512112555745	0.05736552795568
		22.43335336346859	0.08322790380653
		22.94825670472314	0.08251109134007
		23.43757906834189	0.05593837480369
		23.85022228424511	0.02382505690560
		24.13988869524707	0.00452734336234
8	2	25.15429200762589	0.15848731169756
		26.52560122358732	0.15681453206717
	4	24.64941521994206	0.03583620450451
		25.40086247158694	0.12294954111102
		26.28197578102811	0.12168541188317
		27.03756500708549	0.03483068626602
	6	24.47677166051336	0.01115251851040
		24.92084145545620	0.05186124805806
		25.51755869142497	0.09591927150009
		26.16712543028191	0.09507238706031
		26.76568289056555	0.05056082014563
		27.21233253279678	0.01073559849023
	8	24.39937177832746	0.00443833775035
		24.68717716506677	0.02313502057643
		25.09781401035961	0.05360117705378
		25.58569641514276	0.07784705428734
		26.10015977182225	0.07725708574899
		26.58900040880581	0.05242683951943
		27.00119018684910	0.02234737669032
		27.29051208725821	0.00424895213809

S	N	x_k	A_k
9	2	28.30483420067677	0.14940910010901
		29.67532319806841	0.14800117783916
	4	27.79986436275680	0.03374987275747
		28.55109634344965	0.11591032534996
		29.43168581083763	0.11484629213210
		30.18661145543442	0.03290378770864
	6	27.62720246489142	0.01049744840788
		28.07115653245428	0.04885108449022
		28.66762259116540	0.09043559568123
		29.31680496527883	0.08972273834368
		29.91491240672749	0.04775670975778
		30.36116631117056	0.01014670126739
	8	27.54980355664337	0.00417631352846
		27.83752654586598	0.02178071952677
		28.24800883968818	0.05049963501858
		28.73565623365190	0.07340196795773
		29.24981615573849	0.07290535771448
		29.73831833178820	0.04951128612156
		30.15018536482800	0.02111799342484
		30.43925996430644	0.00401700465575
10	2	31.45357304442834	0.14174502593494
		32.82347231852917	0.14053869220416
	4	30.94850358721114	0.03199307230008
		31.69959999323216	0.10996704761255
		32.57981282331519	0.10905532845738
		33.33424218051411	0.03126826976908
	6	30.77581875627325	0.00994663426790
		31.21970151200881	0.04631508462135
		31.81599553771590	0.08580456201120
		32.46490155746648	0.08519373372530
		33.06267689114788	0.04537749730701
		33.50863438486530	0.00964620620635
	8	30.69841698129388	0.00395617273171
		30.98608769318204	0.02064131181423
		31.39646605857231	0.04788532762083
		31.88394894776961	0.06964729370959
		32.39789070389831	0.06922175585172
		32.88614507117747	0.04703852357869
		33.29777287468754	0.02007360320336
		33.58666270950660	0.00381972962897

S	N	x_k	A_k
11	2	34.60100507368449	0.13515982859075
		35.97046605655288	0.13411113995729
	4	34.09583734140955	0.03048675405513
		34.84684720188337	0.10486002665815
		35.72678010742274	0.10406742881829
		36.48082641040109	0.02985675901647
	6	33.92312823936818	0.00947490392744
		34.36696680720992	0.04413977727186
		34.96313930935220	0.08182437120620
		35.61183993695184	0.08129334146329
		36.20936211312307	0.04332477497635
		36.65509050436412	0.00921379970290
	8	33.84572168815615	0.00376776511768
		34.13335870973947	0.01966505016800
		34.54366515863719	0.04564193061527
		35.03102908822675	0.06641978149417
		35.54480869924232	0.06604983204563
		36.03287559006558	0.04490580816859
		36.44432027533990	0.01917161248051
		36.73306763028119	0.00364918845819
12	2	37.74745948352683	0.12942051856858
		39.11658579836799	0.12849787329926
	4	37.24219824913862	0.02917622422242
		37.99315284946863	0.10040875422424
		38.87287201058593	0.09971140423896
		39.62661500477498	0.02862200918223
	6	37.06946510607235	0.00906488405234
		37.51327664638840	0.04224657786702
		38.10936117739121	0.07835468719416
		38.75790497194910	0.07788746571973
		39.35522902456875	0.04152957209276
		39.80077576950711	0.00883520494183
	8	36.99205289073644	0.00360409523649
		37.27966812206251	0.01881618193578
		37.68992371196134	0.04368881029829
		38.17719932062744	0.06360586281040
		38.69085512124347	0.06328036373786
		39.17877634709139	0.04304117700346
		39.59007715643768	0.01838210629161
		39.87871178427615	0.00349979455395

S	N	x_k	A_k
13	2	40.89316326812318	0.12435930106357
		42.26202823181170	0.12353931181312
	4	40.38781462442769	0.02802223994641
		41.13873450511384	0.09648320735607
		42.01828674682971	0.09586343559644
		42.77178444794824	0.02752972997777
	6	40.21505841148294	0.00870413523731
		40.65885407871567	0.04057905781545
		41.25487366668673	0.07529438619241
		41.90329498565752	0.07487913728350
		42.50046056370287	0.03994185594614
		42.94586022502730	0.00850004040189
	8	40.13764019943093	0.00346016032301
		40.42524148250290	0.01806908571801
		40.83546051500599	0.04196802268149
		41.32266910953168	0.06112367763741
		41.83622822300665	0.06083438449976
		42.32403373771758	0.04139245621393
		42.73521903263685	0.01768334469062
		43.02376256156351	0.00336748111246
14	2	44.03827808556366	0.11985176208883
		45.40693504119769	0.11911669942743
	4	43.53284843568026	0.02699579678204
		44.28374738496401	0.09298696416223
		45.16316677593409	0.09243137466501
		45.91646254981189	0.02655432590697
	6	43.36007044633097	0.00838347981244
		43.80385763992086	0.03909548328498
		44.39982852387473	0.07256845374586
		45.04815236483427	0.07219620392310
		45.64518883079296	0.03852429652879
		46.09046727074896	0.00820054422110
	8	43.28264621032234	0.00333227315437
		43.57023883141070	0.01740484449521
		43.98043127886442	0.04043668559058
		44.46758809252898	0.05891248610658
		44.98107025300279	0.05865314804473
		45.46878211878118	0.03992073743632
		45.87987296671687	0.01705908202438
		46.16834155175299	0.00324920466409

S	N	x_k	A_k
15	2	47.18292221865925	0.11580338751882
		48.55141090800140	0.11513953328081
	4	46.67741779755233	0.02607492155250
		47.42830522878095	0.08984676644369
		48.30761715101780	0.08934499344904
		49.06074416473259	0.02567623935441
	6	46.50461943199939	0.00809597558182
		46.94840313226307	0.03776421990014
		47.54433702771520	0.07011988106454
		48.19258201448812	0.06978368641660
		48.78951162670843	0.03724838077280
		49.23468864525033	0.00793077706374
	8	46.42718931151745	0.00321764707849
		46.71477689712976	0.01680914011442
		47.12494986734109	0.03906227626659
		47.61206604957769	0.05692611762210
		48.12548595946533	0.05669189745868
		48.61312081272105	0.03859631492153
		49.02413323084482	0.01649689288912
		49.31253921952885	0.00314263444871
16	2	50.32718422562051	0.11214088722856
		51.69553486682650	0.11153743817320
	4	49.82161088567079	0.02524261636130
		50.57249330452091	0.08700580102848
		51.45171705763920	0.08654968096745
		52.20470118171964	0.02488022704453
	6	49.64879354006721	0.00783625937034
		50.09257712970569	0.03656078432374
		50.68848265426308	0.06790444648806
		51.33666294776704	0.06759883816404
		51.93350292095452	0.03609189305679
		52.37859397712885	0.00768610399879
	8	49.57135776252823	0.00311413091457
		49.85894283330753	0.01627090520744
		50.26910148661497	0.03781961178338
		50.75618536359965	0.05512875092664
		51.26955420210874	0.05491583895716
		51.75712484393467	0.03739605265304
		52.16807125507631	0.01598708467750
		52.45642427271638	0.00304595028203

S	N	x_k	A_k
17	2	53.47113173539563	0.10880641829058
		54.83936771597287	0.10825473512004
	4	52.96549486511870	0.02448549432396
		53.71637680305035	0.08441922530557
		54.59552732414218	0.08400222955537
		55.34838908464042	0.02415420422572
	6	52.79265987631542	0.00760011227064
		53.23644566102894	0.03546588635409
		53.83232925999617	0.06588723884340
		54.48045582018613	0.06560784315092
		55.07721970200299	0.03503722636054
		55.52223707262737	0.00746284643101
	8	52.71521871158540	0.00302003358035
		53.00280303532086	0.01578142965063
		53.41295117693347	0.03668884245148
		53.90000907578525	0.05349210193914
		54.41333549514408	0.05329745132529
		54.90085194994577	0.03630162039889
		55.31174215735526	0.01552196743888
		55.60004983652127	0.00295770662597
18	2	56.61481729156391	0.10575362524811
		57.98295699605298	0.10524670534836
	4	56.10912180124935	0.02379284728798
		56.86000642503202	0.08205109969361
		57.73909545593572	0.08166793628254
		58.49185138323730	0.02348844733234
	6	55.93627042141525	0.00738416306018
		56.38005996841343	0.03446409011252
		56.97592653227588	0.06404027324680
		57.62400797461775	0.06378354488584
		58.22070659066539	0.03407021768550
		58.66566017150976	0.00725804160563
	8	55.85882415536058	0.00293400457168
		56.14640897790580	0.01533375056301
		56.55654945094731	0.03565407884915
		57.04358625352869	0.05199349476452
		57.55687705512747	0.05181463571995
		58.04434729468691	0.03529827790404
		58.45518915254638	0.01509534964166
		58.74345763680934	0.00287673858246

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19	2	59.75828234003197	0.10294485705213
		61.12634042041591	0.10247695622132
	4	59.25253268004432	0.02315599238136
		60.00342219881029	0.07987223135440
		60.88245909747595	0.07951855919121
		61.63512268045053	0.02287503034647
	6	59.07966606743365	0.00718568063748
		59.52346043045460	0.03354287510923
		60.11931371666783	0.06234081469893
		60.76735690747100	0.06210384535215
		61.36399902555091	0.03317932511590
		61.80889689849515	0.00706927235975
	8	59.00221498660230	0.00285495038932
		59.28980118635761	0.01492222512378
		59.69993613882359	0.03470242839194
		60.18695566279925	0.05061450505605
		60.70021626717507	0.05044941152092
		61.18764671782415	0.03437401611818
		61.59844660354638	0.01470218138178
		61.88668090364384	0.00280209529149
20	2	62.90156001432275	0.10034916777515
		64.26954829188634	0.09991552360750
	4	62.39576020812505	0.02256780374421
		63.14665615056705	0.07785862498511
		64.02564846704497	0.07753084487214
		64.77823084214945	0.02230741778119
	6	62.22287942648317	0.00700242548319
		62.66667929825404	0.03269196305431
		63.26252222542081	0.06077017335952
		63.91053270446454	0.06055055170695
		64.50712551137928	0.03235503375529
		64.95197435430727	0.00689454402340
	8	62.14542380942026	0.00278197477896
		62.43301200275525	0.01454222469880
		62.84314307262545	0.03382330424132
		63.33014833923223	0.04933998489475
		63.84338311970310	0.04918697702631
		64.33077902509277	0.03351893749879
		64.74154217899614	0.01433829650579
		65.02974642992312	0.00273299173794