The range covered is $n = 0.05(0.05)10(0.1)20(0.25)70$, $x = 0.0001(0.0001)0.001(0.001)0.01(0.01)1(0.05)6(0.1)16(0.5)66(1)166(2)250$. Occasionally, tabular values are listed for a few additional values of x. On the other hand, tabular values that round to 0 or 1 to 10D have been omitted. The underlying calculations were performed on an IBM 7090 system under the direction of Wilhelm Rudert at the Technische Hochschule Institut für Praktische Mathematik, at Darmstadt.

As the author points out in the introduction to these tables, the tabulated function $P(n, x)$ coincides with the well-known χ^2 cumulative distribution function for $2n$ degrees of freedom whenever $2n$ is a positive integer, and it is related to the Poisson cumulative distribution when n is a positive integer.

Indeed, the calculation of these impressive tables was motivated by a desire to provide more adequate tables for these two statistical distributions. Thus, earlier tables such as those of K. Pearson [1], Hartley & E. S. Pearson [2], Molina [3], and Kitigawa [4] are now superseded by this more extensive tabulation.

The author includes all these tables in his list of 13 references.

The introduction is written in English as well as in German. This section of the book includes a description of the tables; a brief description of the procedure followed in their calculation; a discussion of some of their general uses; a discussion, with illustrative examples, of interpolation (direct and inverse) and extrapolation; and an auxiliary 10D table of $\Gamma(n)$ for $n = 1(0.025)2$.

Attractively bound and printed, these tables constitute a significant contribution to the mathematical and statistical tabular literature.

J. W. W.

1. K. Pearson, *Tables of the Incomplete Γ-Function*, H. M. Stationery Office, London, 1922; reissued by *Biometrika* Office, University College, London, 1934.
2. H. O. Hartley & E. S. Pearson, "Tables of the χ^2-integral and of the cumulative Poisson distribution," *Biometrika*, v. 37, 1950, pp. 313–325.
3. E. C. Molina, *Tables of Poisson's Exponential Limit*, Van Nostrand, New York, 1942.
4. T. Kitigawa, *Tables of Poisson Distributions*, Baifukan, Tokyo, 1951.

17 [7].—Joyce Weil, Tadepalli S. Murty & Desiraju B. Rao, *Zeros of* $J_n(\lambda)Y_n(\eta\lambda) - J_n(\eta\lambda)Y_n(\lambda)$ *and* $J_n'(\lambda)Y_n'(\eta\lambda) - J_n'(\eta\lambda)Y_n'(\lambda)$, ms. of 20 computer sheets deposited in UMT file, also in microfiche section of this issue.

The first ten positive zeros of the two functions specified in the title are tabulated to 5D for $n = 0(1)10$ and $\eta = 0(0.05)0.95$. Details of the underlying computational procedure have been published [1] by the authors. The zeros of the second function were found in the same manner as those of the first, after use was made of the relation $Z_n'(x) = nZ_n(x)/x - Z_{n+1}(x)$, where Z_n represents either J_n or Y_n.

J. W. W.

1. Joyce Weil, Tadepalli S. Murty & Desiraju B. Rao, "Zeros of $J_n(\lambda)Y_n(\eta\lambda) - J_n(\eta\lambda)Y_n(\lambda)$," *Math. Comp.*, v. 21, 1967, pp. 722–727.

18 [7].—Henry E. Fettis & James C. Caslin, *Elliptic Functions for Complex Arguments*, Report ARL 67-0001, Aerospace Research Laboratories, Office of Aerospace Research, United States Air Force, Wright-Patterson Air Force Base, Ohio, January 1967, iv + 404 pp., 28 cm. Copies obtainable from the Defense Documentation Center, Cameron Station, Alexandria, Va. 22314.

$$J_n(\lambda)Y_n(\eta\lambda) - J_n(\eta\lambda)Y_n(\lambda) = 0$$

$\eta = 0.15$

n=	0	1	2	3	4	5	6	7	8	9	10
1	3.558143	4.067054	5.166435	6.383110	7.588567	8.771507	9.936103	11.08637	12.22509	13.35430	14.47550
2	7.302223	7.652702	8.576881	9.788688	11.06829	12.33898	13.58933	14.82126	16.03777	17.24121	18.43346
3	11.02213	11.28318	12.02663	13.12426	14.33382	15.70339	17.00421	18.28762	19.55454	20.80704	22.04698
4	14.73224	14.93837	15.54352	16.49654	17.69094	18.99570	20.32337	21.64189	22.94521	24.23389	25.50945
5	18.43749	18.60707	19.11122	19.93059	21.01413	22.26947	23.59722	24.93689	26.26711	27.58379	28.88738
6	22.13999	22.28371	22.71332	23.42192	24.38800	25.55983	26.85579	28.19905	29.54711	30.88561	32.21189
7	25.84079	25.96532	26.33852	26.95833	27.81679	28.88944	30.12360	31.44136	32.80132	34.15543	35.50008
8	29.54048	29.65026	29.97962	30.52438	31.29438	32.26778	33.42044	34.69953	36.04254	37.40393	38.76256
9	33.23940	33.33748	33.63195	34.12331	34.81171	35.69428	36.75840	37.97214	39.28379	40.64020	42.00685
10	36.93776	37.02637	37.29248	37.73680	38.36035	39.16324	40.14118	41.27800	42.53861	43.87383	45.23958

$\eta = 0.2$

n=	0	1	2	3	4	5	6	7	8	9	10
1	3.815956	4.235740	5.221763	6.394529	7.590370	8.771736	9.936134	11.08637	12.22509	13.35430	14.47550
2	7.785530	8.055351	8.803947	9.873893	11.09079	12.34359	13.59012	14.82138	16.03778	17.24121	18.43346
3	11.73210	11.92658	12.49359	13.38065	14.49678	15.73444	17.01169	18.28916	19.55481	20.80709	22.04698
4	15.67015	15.82103	16.26828	16.99396	17.96138	19.10910	20.36064	21.65193	22.94753	24.23436	25.50954
5	19.60421	19.72705	20.09351	20.69683	21.52297	22.54479	23.71630	24.97856	26.27928	27.58687	28.88808
6	23.53607	23.63948	23.94886	24.46134	25.17142	26.06818	27.13018	28.32065	29.59177	30.89952	32.21567
7	27.46662	27.55585	27.82306	28.26702	28.88539	29.67389	30.62377	31.71715	32.92331	34.20201	35.51538
8	31.39631	31.47472	31.70970	32.10067	32.64656	33.34574	34.19484	35.18654	36.30541	37.52491	38.81026
9	35.32543	35.39533	35.60492	35.95488	36.44175	37.06786	37.83109	38.72881	39.75461	40.89479	42.12283
10	39.25414	39.31719	39.50626	39.82122	40.26183	40.82785	41.51902	42.33460	43.27245	44.32677	45.48513

$\eta = 0.25$

n=	0	1	2	3	4	5	6	7	8	9	10
1	4.097679	4.447502	5.319862	6.426475	7.598411	8.773445	9.936454	11.08643	12.22510	13.35430	14.47550
2	8.323768	8.536918	9.144355	10.05957	11.16883	12.36969	13.59742	14.82318	16.03818	17.24131	18.43347
3	12.52866	12.67896	13.12149	13.83118	14.76537	15.86484	17.06366	18.30664	19.55995	20.80846	22.04732
4	16.72628	16.84163	17.18476	17.74680	18.51238	19.45739	20.54665	21.73564	22.97975	24.24524	25.51284
5	20.92058	21.01395	21.29274	21.75316	22.38881	23.19001	24.14196	25.22208	26.39925	27.63813	28.90737
6	25.11314	25.19146	25.42575	25.81411	26.35338	27.03919	27.86522	28.82189	29.89402	31.05930	32.28986
7	29.30467	29.37207	29.57390	29.90909	30.37587	30.97134	31.69426	32.53867	33.49868	34.56383	35.71779
8	33.49553	33.55468	33.73184	34.02640	34.43726	34.96303	35.60205	36.35224	37.21077	38.17324	39.23224
9	37.68594	37.73860	37.89645	38.15903	38.52564	38.99538	39.56719	40.23987	41.01206	41.88182	42.84613
10	41.87603	41.92350	42.06578	42.30257	42.63340	43.05761	43.57450	44.18328	44.88312	45.67313	46.55204

$$Y_n(\lambda)Y_n(\eta\lambda) - J_n(\eta\lambda)Y_n(\lambda) = 0$$

$\eta = 0.3$

n \ s	0	1	2	3	4	5	6	7	8	9	10
1	4.412391	4.705772	5.480237	6.493721	7.622840	8.781013	9.938545	11.08696	12.22522	13.35433	14.47550
2	8.932838	9.104240	9.600273	10.37181	11.34801	12.45633	13.63324	14.83618	16.04244	17.24259	18.43384
3	13.43413	13.55316	13.90544	14.47701	15.24549	16.18064	17.24495	18.39736	19.59995	20.82427	22.05303
4	17.92925	18.01998	18.29035	18.73508	19.34563	20.11035	21.01384	22.03603	23.15178	24.33304	25.55312
5	22.42163	22.49480	22.71344	23.07305	23.57563	24.20991	24.97087	25.85019	26.83644	27.91449	29.06526
6	26.91261	26.97386	27.15712	27.46103	27.88340	28.42131	29.07126	29.82906	30.68953	31.64600	32.68932
7	31.40276	31.45540	31.61302	31.87482	32.23944	32.70513	33.26976	33.93093	34.68586	35.53133	36.46321
8	35.89237	35.93851	36.07675	36.30654	36.62703	37.03704	37.53516	38.11983	38.78934	39.54180	40.37505
9	40.38163	40.42270	40.54577	40.75047	41.03620	41.40215	41.84734	42.37065	42.97092	43.64685	44.39714
10	44.87064	44.90763	45.01852	45.20303	45.46073	45.79103	46.19323	46.66649	47.20995	47.82267	48.50370

$\eta = 0.35$

n \ s	0	1	2	3	4	5	6	7	8	9	10
1	4.770072	5.017005	5.682014	6.612525	7.679756	8.804893	9.947547	11.09008	12.22625	13.35465	14.47559
2	9.654385	9.770912	10.17859	10.82456	11.66622	12.65520	13.74384	14.89130	16.06737	17.25296	18.43788
3	14.47565	14.57149	14.85608	15.32086	15.95258	16.73415	17.64511	18.66204	19.75937	20.91184	22.09720
4	19.31467	19.38739	19.60440	19.96227	20.45558	21.07730	21.81894	22.67055	23.62038	24.65457	25.75710
5	24.15146	24.20996	24.38491	24.67459	25.07633	25.58657	26.20104	26.91489	27.72261	28.61791	29.59323
6	28.98708	29.03598	29.18238	29.42531	29.76323	30.19409	30.71544	31.32445	32.01805	32.79288	33.64522
7	33.82202	33.86403	33.98983	34.19883	34.49007	34.86226	35.31385	35.84301	36.44779	37.12607	37.87563
8	38.65656	38.69335	38.80359	38.98691	39.24265	39.56995	39.96773	40.43479	40.96973	41.57112	42.23745
9	43.49079	43.52352	43.62163	43.78484	44.01271	44.30463	44.65982	45.07743	45.55646	46.09586	46.69449
10	48.32482	48.35430	48.44268	48.58974	48.79517	49.05852	49.37923	49.75666	50.19005	50.67864	51.22155

$\eta = 0.4$

n \ s	0	1	2	3	4	5	6	7	8	9	10
1	5.183067	5.391181	5.965934	6.799644	7.789604	8.863166	9.975837	11.10280	12.23162	13.35680	14.47643
2	10.44324	10.55773	10.89443	11.43471	12.15163	13.01393	13.98920	15.04639	16.15816	17.30245	18.46317
3	15.68842	15.76645	15.99866	16.37960	16.90084	17.55167	18.31977	19.19149	20.15207	21.18584	22.27663
4	20.92918	20.98819	21.16448	21.45575	21.85849	22.36805	22.97888	23.68488	24.47936	25.35506	26.30405
5	26.16808	26.21547	26.35729	26.59240	26.91895	27.33454	27.83623	28.42075	29.08448	29.82360	30.63462
6	31.40602	31.44561	31.56415	31.76099	32.03508	32.38501	32.80901	33.30512	33.87113	34.50469	35.20334
7	36.64341	36.67739	36.77918	36.94839	37.18433	37.48613	37.85263	38.28258	38.77451	39.32683	39.93793
8	41.88046	41.91021	41.99939	42.14771	42.35474	42.61986	42.94232	43.32122	43.75556	44.24424	44.78607
9	47.11727	47.14373	47.22306	47.35507	47.53945	47.77575	48.06346	48.40192	48.79041	49.22814	49.71422
10	52.35391	52.37774	52.44918	52.56810	52.73426	52.94735	53.20698	53.51267	53.86388	54.26001	54.70043

$$J_n(\lambda)Y_n(\eta\lambda) - J_n(\eta\lambda)Y_n(\lambda) = 0$$

$\eta = 0.45$

n =	0	1	2	3	4	5	6	7	8	9	10
1	5.667625	5.842857	6.336372	7.073661	7.976005	8.981056	10.04557	11.14162	12.25208	13.36708	14.48140
2	11.40032	11.49466	11.77344	12.22486	12.83145	13.57268	14.42676	15.37210	16.38828	17.45671	18.56144
3	17.11995	17.18389	17.37447	17.68821	18.11959	18.66161	19.30619	20.04454	20.86751	21.76557	22.72898
4	22.83587	22.88411	23.02833	23.26706	23.59795	24.01789	24.52315	25.10959	25.77272	26.50791	27.31029
5	28.55025	28.58895	28.70481	28.89706	29.16451	29.50553	29.91808	30.39992	30.94850	31.56119	32.23517
6	34.26384	34.29615	34.39290	34.55470	34.77781	35.06429	35.41194	35.81938	36.28505	36.80728	37.38431
7	39.97697	40.00469	40.08774	40.22586	40.41860	40.66535	40.96535	41.31771	41.72138	42.17527	42.67815
8	45.68982	45.71408	45.78682	45.90784	46.07686	46.29345	46.55711	46.86721	47.22304	47.62383	48.06874
9	51.40248	51.42405	51.48875	51.59643	51.74689	51.93983	52.17490	52.45164	52.76955	53.12809	53.52661
10	57.11500	57.13442	57.19268	57.28966	57.42521	57.59913	57.81114	58.26093	58.34810	58.67226	59.03293

$\eta = 0.5$

n =	0	1	2	3	4	5	6	7	8	9	10
1	6.246055	6.393150	6.813835	7.457740	8.266731	9.190040	10.18892	11.23571	12.31130	13.40296	14.50237
2	12.54686	12.62470	12.85553	13.23185	13.74233	14.37329	15.10996	15.93740	16.84113	17.80754	18.82404
3	18.83641	18.88892	19.04570	19.30449	19.66172	20.11278	20.65224	21.27417	21.97237	22.74050	23.57222
4	25.12284	25.16240	25.28076	25.47696	25.74948	26.09627	26.51483	27.00234	27.55571	28.17170	28.84694
5	31.40799	31.43970	31.53468	31.69243	31.91216	32.19281	32.53304	32.93129	33.38584	33.89481	34.45624
6	37.69249	37.71895	37.79822	37.93004	38.11394	38.34928	38.63529	38.97101	39.35540	39.78730	40.26545
7	43.97662	43.99932	44.06733	44.18050	44.33853	44.54102	44.78746	45.07726	45.40970	45.78406	46.19947
8	50.26051	50.28038	50.33993	50.43906	50.57757	50.75518	50.97156	51.22629	51.51891	51.84888	52.21561
9	56.54424	56.56192	56.61487	56.70305	56.82631	56.98445	57.17724	57.40439	57.66556	57.96036	58.28838
10	62.82787	62.84378	62.89145	62.97085	63.08188	63.22438	63.39819	63.60308	63.83882	64.10512	64.40166

$\eta = 0.55$

n =	0	1	2	3	4	5	6	7	8	9	10
1	6.950401	7.073204	7.428672	7.983726	8.697120	9.529533	10.44823	11.42795	12.44980	13.49999	14.56856
2	13.94658	14.01065	14.20122	14.51357	14.94043	15.47281	16.10068	16.81363	17.60146	18.45432	19.36301
3	20.93316	20.97626	21.10504	21.31812	21.61321	21.98732	22.43688	22.95789	23.54607	24.19702	24.90633
4	27.91715	27.94957	28.04663	28.20773	28.43189	28.71781	29.06385	29.46811	29.92856	30.44294	31.00890
5	34.90008	34.92606	35.00388	35.13324	35.31363	35.54438	35.82460	36.15331	36.52933	36.95140	37.41820
6	41.88248	41.90415	41.96907	42.07709	42.22790	42.42111	42.65620	42.93257	43.24953	43.60630	44.00203
7	48.86457	48.88315	48.93884	49.03154	49.16106	49.32714	49.52947	49.76765	50.04123	50.34970	50.69252
8	55.84646	55.86272	55.91148	55.99265	56.10613	56.25172	56.42923	56.63837	56.87886	57.15033	57.45241
9	62.82823	62.84269	62.88604	62.95823	63.05919	63.18877	63.34684	63.53320	63.74764	63.98991	64.25973
10	69.80991	69.82232	69.86145	69.92695	70.01886	70.13460	70.27704	70.44506	70.63849	70.85715	71.10084

$$J_n(\lambda)Y_n(\eta\lambda) - J_n(\eta\lambda)Y_n(\lambda) = 0$$

$\eta = 0.6$

n =	0	1	2	3	4	5	6	7	8	9	10
1	7.828437	7.930091	8.227165	8.698722	9.316810	10.05255	10.87995	11.77729	12.72730	13.71651	14.73455
2	15.69483	15.74727	15.90363	16.16098	16.51482	16.95938	17.48802	18.09368	18.76914	19.50737	20.30161
3	23.55314	23.58832	23.69359	23.86806	24.11035	24.41857	24.79044	25.22336	25.71448	26.26079	26.85921
4	31.40931	31.43575	31.51498	31.64660	31.83004	32.06447	32.34886	32.68203	33.06261	33.48915	33.96006
5	39.26460	39.28578	39.34926	39.45486	39.60225	39.79102	40.02062	40.29042	40.59970	40.94763	41.33333
6	47.11947	47.13713	47.19007	47.27819	47.40131	47.55918	47.75148	47.97784	48.23781	48.53090	48.85659
7	54.97408	54.98923	55.03463	55.11023	55.21591	55.35151	55.51684	55.71166	55.93567	56.18857	56.46999
8	62.82853	62.84178	62.88153	62.94772	63.04027	63.15910	63.30405	63.47496	63.67165	63.89390	64.14146
9	70.68288	70.69466	70.73000	70.78885	70.87118	70.97690	71.10592	71.25812	71.43337	71.63152	71.85238
10	78.53715	78.54776	78.57957	78.63255	78.70668	78.80190	78.91813	79.05529	79.21328	79.39199	79.59130

$\eta = 0.65$

n =	0	1	2	3	4	5	6	7	8	9	10
1	8.955116	9.038246	9.283012	9.676734	10.20156	10.83760	11.56551	12.36795	13.23014	14.13987	15.08721
2	17.94132	17.98383	18.11077	18.32045	18.61016	18.97637	19.41489	19.92112	20.49019	21.11722	21.79738
3	26.92081	26.94928	27.03449	27.17596	27.37285	27.62404	27.92812	28.28350	28.68836	29.14077	29.63866
4	35.89856	35.91994	35.98401	36.09056	36.23923	36.42953	36.66086	36.93248	37.24358	37.59322	37.98041
5	44.87561	44.89273	44.94404	45.02944	45.14875	45.30171	45.48801	45.70726	45.95902	46.24279	46.55802
6	53.85230	53.86657	53.90936	53.98060	54.08019	54.20799	54.36380	54.54741	54.75854	54.99690	55.26216
7	62.82878	62.84102	62.87771	62.93881	63.02427	63.13398	63.26783	63.42567	63.60734	63.81264	64.04137
8	71.80514	71.81586	71.84796	71.90145	71.97627	72.07237	72.18965	72.32803	72.48739	72.66760	72.86852
9	80.78142	80.79094	80.81948	80.86704	80.93358	81.01906	81.12341	81.24658	81.38848	81.54902	81.72809
10	89.75763	89.76621	89.79190	89.83471	89.89462	89.97158	90.06557	90.17652	90.30439	90.44910	90.61058

$\eta = 0.7$

n =	0	1	2	3	4	5	6	7	8	9	10
1	10.45523	10.52202	10.71987	11.04154	11.47640	12.01180	12.63456	13.33197	14.09241	14.90569	15.76299
2	20.93546	20.96938	21.07082	21.23385	21.47191	21.76799	22.12462	22.53899	23.00808	23.52869	24.09758
3	31.41025	31.43293	31.50088	31.61381	31.77127	31.97262	32.21706	32.50367	32.83135	33.19898	33.60526
4	41.88363	41.90067	41.95171	42.03666	42.15530	42.30738	42.49254	42.71038	42.96041	43.24208	43.55484
5	52.35646	52.37009	52.41096	52.47901	52.57413	52.69619	52.84501	53.02037	53.22202	53.44968	53.70301
6	62.82900	62.84037	62.87443	62.93118	63.01055	63.11244	63.23677	63.38341	63.55220	63.74297	63.95555
7	73.30138	73.31112	73.34039	73.38899	73.45706	73.54450	73.65123	73.77718	73.92225	74.08633	74.26930
8	83.77366	83.78218	83.80775	83.85034	83.90993	83.98649	84.07997	84.19032	84.31748	84.46137	84.62191
9	94.24587	94.25344	94.27617	94.31403	94.36702	94.43511	94.51826	94.61644	94.72961	94.85771	95.00068
10	104.7180	104.7248	104.7453	104.7794	104.8271	104.8883	104.9632	105.0516	105.1536	105.2690	105.3978

$$J_n(\lambda)Y_n(\eta\lambda) - J_n(\eta\lambda)Y_n(\lambda) = 0$$

$\eta = 0.75$

n =	0	1	2	3	4	5	6	7	8	9	10
1	12.55326	12.60559	12.76129	13.01659	13.36570	13.80136	14.31555	14.89997	15.54648	16.24749	16.99601
2	25.12612	25.15256	25.23169	25.36306	25.54584	25.77896	26.06111	26.39075	26.76613	27.18540	27.64661
3	37.69469	37.71235	37.76526	37.85330	37.97623	38.13370	38.32532	38.55056	38.80887	39.09961	39.42208
4	50.26216	50.27542	50.31514	50.38130	50.47377	50.59242	50.73708	50.90752	51.10349	51.32471	51.57086
5	62.82919	62.83980	62.87160	62.92456	62.99865	63.09378	63.20985	63.34677	63.50439	63.68257	63.88114
6	75.39600	75.40485	75.43135	75.47551	75.53729	75.61666	75.71355	75.82790	75.95964	76.10868	76.27491
7	87.96268	87.97027	87.99299	88.03085	88.08383	88.15191	88.23504	88.33319	88.44631	88.57434	88.71723
8	100.5292	100.5359	100.5558	100.5889	100.6353	100.6949	100.7677	100.8536	100.9527	101.0649	101.1902
9	113.0958	113.1017	113.1194	113.1488	113.1901	113.2431	113.3078	113.3842	113.4724	113.5722	113.6837
10	125.6623	125.6676	125.6835	125.7100	125.7472	125.7949	125.8531	125.9220	126.0014	126.0913	126.1917

$\eta = 0.8$

n =	0	1	2	3	4	5	6	7	8	9	10
1	15.69808	15.73755	15.85539	16.04973	16.31797	16.65642	17.06089	17.52674	18.04918	18.62336	19.24460
2	31.41095	31.43080	31.49029	31.58918	31.72712	31.90361	32.11801	32.36959	32.65747	32.98073	33.33837
3	47.12056	47.13382	47.17354	47.23969	47.33213	47.45073	47.59529	47.76558	47.96134	48.18222	48.42794
4	62.82935	62.83931	62.86911	62.91877	62.98824	63.07744	63.18629	63.31470	63.46254	63.62969	63.81600
5	78.53780	78.54578	78.56962	78.60937	78.66499	78.73644	78.82369	78.92668	79.04534	79.17962	79.32943
6	94.24609	94.25274	94.27261	94.30575	94.35212	94.41171	94.48448	94.57043	94.66949	94.78164	94.90683
7	109.9543	109.9600	109.9770	110.0054	110.0451	110.0962	110.1587	110.2324	110.3174	110.4137	110.5211
8	125.6624	125.6674	125.6823	125.7071	125.7419	125.7867	125.8413	125.9058	125.9803	126.0646	126.1587
9	141.3705	141.3749	141.3882	141.4103	141.4412	141.4810	141.5295	141.5869	141.6531	141.7281	141.8119
10	157.0786	157.0826	157.0945	157.1144	157.1422	157.1780	157.2217	157.2734	157.3330	157.4005	157.4759

$\eta = 0.85$

n =	0	1	2	3	4	5	6	7	8	9	10
1	20.98695	20.96492	21.04859	21.18730	21.37996	21.62517	21.92110	22.26575	22.65688	23.09211	23.56897
2	41.88438	41.89841	41.94046	42.01046	42.10826	42.23368	42.38648	42.56633	42.77294	43.00589	43.26477
3	62.82949	62.83886	62.86691	62.91366	62.97905	63.06302	63.16550	63.28639	63.42561	63.58302	63.75850
4	83.77402	83.78106	83.80210	83.83718	83.88627	83.94934	84.02636	84.11730	84.22211	84.34073	84.47312
5	104.7183	104.7239	104.7407	104.7688	104.8081	104.8586	104.9203	104.9931	105.0771	105.1722	105.2784
6	125.6625	125.6672	125.6812	125.7046	125.7373	125.7794	125.8308	125.8916	125.9617	126.0410	126.1297
7	146.6066	146.6106	146.6226	146.6427	146.6707	146.7068	146.7509	146.8030	146.8631	146.9312	147.0072
8	167.5506	167.5542	167.5647	167.5822	167.6068	167.6384	167.6770	167.7226	167.7752	167.8348	167.9013
9	188.4947	188.4978	188.5072	188.5228	188.5446	188.5727	188.6070	188.6475	188.6943	188.7473	188.8065
10	209.4387	209.4416	209.4499	209.4640	209.4836	209.5089	209.5398	209.5763	209.6184	209.6661	209.7194

$$J_n(\lambda)Y_n(\eta\lambda) - J_n(\eta\lambda)Y_n(\lambda) = 0$$

$\eta = 0.9$

k \ n	0	1	2	3	4	5	6	7	8	9	10
1	31.41150	31.42915	31.48206	31.57001	31.69275	31.84986	32.04082	32.26506	32.52187	32.81047	33.13005
2	62.82961	62.83845	62.86495	62.90911	62.97087	63.05019	63.14700	63.26122	63.39276	63.54154	63.70737
3	94.24626	94.25215	94.26983	94.29929	94.34051	94.39348	94.45819	94.53461	94.62270	94.72248	94.83383
4	125.6625	125.6669	125.6802	125.7023	125.7332	125.7730	125.8215	125.8789	125.9451	126.0201	126.1038
5	157.0786	157.0822	157.0928	157.1105	157.1352	157.1670	157.2059	157.2518	157.3048	157.3648	157.4319
6	188.4947	188.4976	188.5065	188.5212	188.5418	188.5684	188.6008	188.6390	188.6832	188.7333	188.7892
7	219.9107	219.9132	219.9208	219.9334	219.9511	219.9739	220.0016	220.0345	220.0723	220.1152	220.1632
8	251.3267	251.3289	251.3355	251.3466	251.3621	251.3820	251.4063	251.4350	251.4681	251.5057	251.5476
9	282.7427	282.7446	282.7505	282.7604	282.7741	282.7918	282.8134	282.8389	282.8684	282.9018	282.9391
10	314.1586	314.1604	314.1657	314.1745	314.1869	314.2028	314.2223	314.2453	314.2718	314.3018	314.3354

$\eta = 0.95$

k \ n	0	1	2	3	4	5	6	7	8	9	10
1	62.82974	62.83807	62.86323	62.90506	62.96358	63.03873	63.13047	63.23872	63.36338	63.50437	63.66158
2	125.6626	125.6667	125.6793	125.7003	125.7296	125.7673	125.8133	125.8676	125.9303	126.0014	126.0807
3	188.4946	188.4974	188.5058	188.5198	188.5393	188.5644	188.5951	188.6314	188.6732	188.7207	188.7736
4	251.3266	251.3287	251.3350	251.3454	251.3601	251.3789	251.4020	251.4292	251.4606	251.4962	251.5359
5	314.1585	314.1602	314.1652	314.1736	314.1853	314.2004	314.2188	314.2406	314.2657	314.2942	314.3260
6	376.9904	376.9918	376.9959	377.0029	377.0127	377.0253	377.0406	377.0588	377.0797	377.1034	377.1299
7	439.8222	439.8234	439.8270	439.8330	439.8413	439.8521	439.8653	439.8808	439.8988	439.9191	439.9418
8	502.6540	502.6551	502.6582	502.6635	502.6708	502.6802	502.6917	502.7053	502.7210	502.7388	502.7587
9	565.4858	565.4868	565.4896	565.4942	565.5007	565.5091	565.5193	565.5314	565.5454	565.5612	565.5789
10	628.3177	628.3185	628.3210	628.3252	628.3311	628.3386	628.3478	628.3587	628.3713	628.3855	628.4014

$$J_n'(\lambda)Y_n'(\eta\lambda) - J_n'(\eta\lambda)Y_n'(\lambda) = 0$$

$\eta = 0$

n =	0	1	2	3	4	5	6	7	8	9	10
1	3.831706	1.841183	3.054236	4.201188	5.317553	6.415616	7.501265	8.577836	9.647421	10.71143	11.77087
2	7.015585	5.331442	6.706133	8.015236	9.282395	10.51986	11.73493	12.93238	14.11552	15.28673	16.44785
3	10.17346	8.536316	9.969468	11.34592	12.68190	13.98718	15.26818	16.52936	17.77401	19.00459	20.22303
4	13.32369	11.70600	13.17037	14.58584	15.96410	17.31284	18.63744	19.94185	21.22906	22.50139	23.76071
5	16.47063	14.86358	16.34752	17.78874	19.19602	20.57551	21.93171	23.26805	24.58719	25.89127	27.18202
6	19.61585	18.01552	19.51291	20.97247	22.40103	23.80358	25.18392	26.54503	27.88927	29.21856	30.53450
7	22.76008	21.16436	22.67158	24.14489	25.58975	27.01030	28.40977	29.79074	31.15532	32.50524	33.84196
8	25.90367	24.31132	25.82603	27.31005	28.76783	30.20284	31.61787	33.01517	34.39662	35.76379	37.11799
9	29.04682	27.45704	28.97767	30.47026	31.93853	33.38544	34.81339	36.22438	37.62007	39.00190	40.37106
10	32.18967	30.60192	32.12732	33.62694	35.10391	36.56077	37.99964	39.42227	40.83017	42.22463	43.60676

$\eta = 0.05$

n =	0	1	2	3	4	5	6	7	8	9	10
1	3.860328	1.831565	3.054161	4.201194	5.317558	6.415611	7.501258	8.577842	9.647422	10.71143	11.77088
2	7.104545	5.274757	6.704841	8.015220	9.282402	10.51985	11.73493	12.93238	14.11551	15.28673	16.44785
3	10.34729	8.401649	9.963493	11.34578	12.68190	13.98719	15.26818	16.52936	17.77401	19.00460	20.22303
4	13.60045	11.48145	13.15293	14.58525	15.96408	17.31284	18.63744	19.94185	21.22905	22.50139	23.76071
5	16.86354	14.56160	16.30800	17.78690	19.19597	20.57550	21.93170	23.26805	24.58719	25.89127	27.18201
6	20.13468	17.66709	19.43734	20.96776	22.40084	23.80358	25.18392	26.54503	27.88927	29.21855	30.53450
7	23.41213	20.80698	22.54453	24.13448	25.58924	27.01029	28.40978	29.79074	31.15532	32.50524	33.84197
8	26.69451	23.98000	25.63433	27.28948	28.76659	30.20279	31.61786	33.01517	34.39662	35.76378	37.11800
9	29.98076	27.18059	28.71512	30.43308	31.93582	33.38530	34.81339	36.22437	37.62007	39.00190	40.37107
10	33.27010	30.40271	31.79834	33.56459	35.09848	36.56044	37.99962	39.42227	40.83017	42.22463	43.60675

$\eta = 0.1$

n =	0	1	2	3	4	5	6	7	8	9	10
1	3.940940	1.803474	3.052940	4.201149	5.317558	6.415611	7.501258	8.577842	9.647422	10.71143	11.77088
2	7.330574	5.137138	6.686683	8.014152	9.282356	10.51985	11.73493	12.93238	14.11551	15.28673	16.44785
3	10.74837	8.199165	9.887519	11.33835	12.68140	13.98716	15.26818	16.52936	17.77401	19.00460	20.22303
4	14.18863	11.35878	12.96962	14.55603	15.96134	17.31264	18.63742	19.94185	21.22905	22.50139	23.76071
5	17.64330	14.63436	16.01186	17.70575	19.18550	20.57451	21.93163	23.26804	24.58719	25.89127	27.18201
6	21.10730	17.98641	19.10105	20.79509	22.37018	23.79988	25.18357	26.54500	27.88925	29.21855	30.53450
7	24.57756	21.38369	22.28167	23.84610	25.51569	26.99918	28.40848	29.79062	31.15531	32.50524	33.84197
8	28.05219	24.80814	25.54688	26.90840	28.61835	30.17444	31.61389	33.01471	34.39658	35.76378	37.11800
9	31.52994	28.24973	28.87352	30.03006	31.68409	33.32236	34.80283	36.22296	37.61991	39.00188	40.37107
10	35.01001	31.70269	32.24178	33.22725	34.74015	36.43756	37.97480	39.41840	40.82967	42.22458	43.60675

$$J_n'(\lambda)Y_n'(\eta\lambda) - J_n'(\eta\lambda)Y_n'(\lambda) = 0$$

$\eta = 0.15$

λ_{mn}	0	1	2	3	4	5	6	7	8	9	10
1	4.067054	1.759773	3.047828	4.200798	5.317527	6.415611	7.501258	8.577842	9.647422	10.71143	11.77088
2	7.652702	5.010353	6.620033	8.004295	9.281318	10.51976	11.73493	12.93238	14.11551	15.28673	16.44785
3	11.28318	8.210395	9.692375	11.27854	12.67174	13.98595	15.26804	16.52935	17.77401	19.00460	20.22303
4	14.93837	11.64179	12.75489	14.37628	15.91527	17.30471	18.63631	19.94171	21.22904	22.50139	23.76071
5	18.60707	15.19525	16.00521	17.40563	19.04604	20.54119	21.92562	23.26712	24.58707	25.89125	27.18201
6	22.28371	18.80576	19.42424	20.53214	22.08983	23.69918	25.16013	26.54059	27.88855	29.21845	30.53449
7	25.96532	22.44545	22.94237	23.82271	25.14969	26.77518	28.33814	29.77437	31.15215	32.50470	33.84188
8	29.65026	26.10173	26.51793	27.24117	28.33188	29.81581	31.44794	32.96637	34.38539	35.76155	37.11760
9	33.33748	29.76822	30.12636	30.74077	31.65078	32.91954	34.50043	36.10479	37.58693	38.99422	40.36949
10	37.02637	33.44146	33.75608	34.29125	35.07112	36.13545	37.56098	39.18357	40.74730	42.20215	43.60152

$\eta = 0.2$

λ_{mn}	0	1	2	3	4	5	6	7	8	9	10
1	4.235740	1.705116	3.034721	4.199058	5.317344	6.415596	7.501258	8.577842	9.647422	10.71143	11.77088
2	8.055351	4.960853	6.494941	7.963783	9.273384	10.51850	11.73474	12.93236	14.11551	15.28673	16.44785
3	11.92658	8.433067	9.509461	11.10602	12.61017	13.97142	15.26522	16.52886	17.77393	19.00458	20.22303
4	15.82103	12.16504	12.89974	14.14931	15.71266	17.22837	18.61602	19.93718	21.22815	22.50122	23.76068
5	19.72705	15.99323	16.51924	17.43239	18.75479	20.32045	21.83924	23.24213	24.58092	25.88990	27.18174
6	23.63948	19.86162	20.26958	20.96776	21.99309	23.36354	24.92952	26.44771	27.85987	29.21083	30.53266
7	27.55585	23.75000	24.08354	24.64817	25.46419	26.56908	27.97440	29.53957	31.05535	32.47324	33.85298
8	31.47472	27.64965	27.93210	28.40731	29.08547	29.98906	31.15465	32.58670	34.15027	35.66268	37.08408
9	35.39533	31.55625	31.80144	32.21250	32.79477	33.56018	34.53258	35.74683	37.20005	38.76142	40.26993
10	39.31719	35.46747	35.68419	36.04683	36.55835	37.22521	38.06060	39.08927	40.34380	41.81412	43.37281

$\eta = 0.25$

λ_{mn}	0	1	2	3	4	5	6	7	8	9	10
1	4.447502	1.644508	3.009300	4.193550	5.316383	6.415443	7.501243	8.577827	9.647422	10.71143	11.77088
2	8.536918	5.004463	6.357246	7.866462	9.240104	10.50995	11.73284	12.93196	14.11544	15.28672	16.44785
3	12.67896	8.808326	9.623191	10.92041	12.43763	13.89493	15.24056	16.52210	17.77225	19.00420	20.22293
4	16.84163	12.85096	13.37123	14.25479	15.50127	16.98825	18.48693	19.88788	21.21237	22.49671	23.75949
5	21.01395	16.96706	17.34474	17.98133	18.89383	20.09897	21.54319	23.05603	24.49921	25.86035	27.17223
6	25.19146	21.11272	21.40947	21.90636	22.61039	23.53768	24.70951	26.10845	27.61657	29.09021	30.48418
7	29.37207	25.27300	25.51772	25.92629	26.50118	27.24921	28.18494	29.32976	30.68531	32.17578	33.66858
8	33.55468	29.44155	29.64995	29.99745	30.48488	31.11400	31.89388	32.83474	33.95746	35.27332	36.73806
9	37.73860	33.61521	33.79679	34.09940	34.52326	35.06938	35.74047	36.54238	37.48650	38.59095	39.87142
10	41.92350	37.79227	37.95320	38.22133	38.59667	39.07956	39.67112	40.37398	41.19356	42.13985	43.22904

$$J_n'(\lambda)Y_n'(\eta\lambda) - J_n'(\eta\lambda)Y_n'(\lambda) = 0$$

$\eta = 0.3$

n =	0	1	2	3	4	5	6	7	8	9	10
1	4.705772	1.582069	2.968498	4.180107	5.312980	6.414680	7.501075	8.577796	9.647407	10.71143	11.77086
2	9.104240	5.137397	6.273674	7.721260	9.152595	10.47502	11.72139	12.92861	14.11452	15.28649	16.44779
3	13.55316	9.308265	9.918006	10.92015	12.24157	13.70400	15.13375	16.47678	17.75571	18.99869	20.22123
4	18.01998	13.68364	14.07465	14.72716	15.64652	16.82996	18.21910	19.68175	21.10157	22.44802	23.74050
5	22.49480	18.11588	18.40306	18.88109	19.55120	20.41979	21.49704	22.77747	24.20078	25.65729	27.06537
6	26.97386	22.57071	22.79807	23.17607	23.70424	24.38384	25.21981	26.22222	27.40094	28.74280	30.18349
7	31.45540	27.03672	27.22504	27.53818	27.97536	28.53626	29.22187	30.03578	30.98577	32.08333	33.33480
8	35.93851	31.50907	31.66989	31.93738	32.31086	32.78969	33.37365	34.06348	34.86180	35.77425	36.81037
9	40.42270	35.98535	36.12574	36.35929	36.68549	37.10372	37.61345	38.21456	38.90758	39.69445	40.57921
10	44.90763	40.46425	40.58882	40.79615	41.08579	41.45723	41.90996	42.44358	43.05794	43.75350	44.53167

$\eta = 0.35$

n =	0	1	2	3	4	5	6	7	8	9	10
1	5.017005	1.520607	2.912010	4.153343	5.303520	6.411766	7.500251	8.577568	9.647361	10.71141	11.77086
2	8.770912	5.355293	6.287010	7.588096	9.005744	10.38234	11.67734	12.91066	14.10784	15.28415	16.44701
3	14.57149	9.929237	10.40020	11.17382	12.23021	13.51349	14.91536	16.32128	17.67029	18.95845	20.20400
4	19.38739	14.67366	14.97878	15.48355	16.18523	17.08351	18.17673	19.44414	20.82566	22.23639	23.61258
5	24.20996	19.46292	19.68877	20.06305	20.58336	21.24803	22.05757	23.01552	24.12558	25.37938	26.74230
6	29.03598	24.26993	24.44945	24.74733	25.16193	25.69144	26.33457	27.09128	27.96375	28.95681	30.07601
7	33.86403	29.08576	29.23481	29.48239	29.82741	30.26847	30.80422	31.43355	32.15613	32.97292	33.88680
8	38.69335	33.90657	34.03405	34.24594	34.54152	34.91977	35.37960	35.91989	36.53977	37.23873	38.01708
9	43.52352	38.73050	38.84188	39.02713	39.28571	39.61689	40.01985	40.49367	41.03748	41.65049	42.33222
10	48.35430	43.55651	43.65541	43.81998	44.04981	44.34438	44.70304	45.12509	45.60979	46.15638	46.76422

$\eta = 0.4$

n =	0	1	2	3	4	5	6	7	8	9	10
1	5.391181	1.461784	2.842399	4.108161	5.282096	6.403114	7.497047	8.576438	9.646965	10.71129	11.77083
2	10.95773	5.659111	6.415992	7.535270	8.852577	10.22501	11.56620	12.84758	14.07650	15.26981	16.44080
3	15.76645	10.68325	11.05596	11.66606	12.50096	13.54311	14.75821	16.08620	17.45441	18.80509	20.11156
4	20.98819	15.84804	16.09165	16.49359	17.04912	17.75371	18.60427	19.69877	20.73165	21.98412	23.31758
5	26.21547	21.04879	21.22992	21.52991	21.94611	22.47553	23.11525	23.86319	24.71871	25.68283	26.75699
6	31.44561	26.26369	26.40802	26.64749	26.98062	27.40552	27.92003	28.52213	29.21003	29.98271	30.84023
7	36.67739	31.48568	31.60567	31.80503	32.08281	32.43782	32.86861	33.37361	33.95131	34.60024	35.31932
8	41.91021	36.71167	36.81438	36.98516	37.22339	37.52826	37.89881	38.33390	38.83235	39.39295	40.01456
9	47.14373	41.94017	42.02997	42.17934	42.38788	42.65502	42.98006	43.36222	43.80060	44.29425	44.84224
10	52.37774	47.17034	47.25011	47.38285	47.56827	47.80597	48.09545	48.43610	48.82727	49.26825	49.75827

$$J_n'(\lambda)Y_n'(\eta\lambda) - J_n'(\eta\lambda)Y_n'(\lambda) = 0$$

$\eta = 0.45$

n =	0	1	2	3	4	5	6	7	8	9	10
1	5.842857	1.406379	2.763969	4.042335	5.241294	6.381965	7.487144	8.572090	9.645434	10.71053	11.77053
2	11.49466	6.056816	6.670433	7.609428	8.773796	10.06160	11.39011	12.70487	13.98301	15.21201	16.40888
3	17.18389	11.59555	11.89518	12.38536	13.05515	13.89286	14.88549	16.01432	17.24948	18.58054	19.87519
4	22.88411	17.24990	17.44695	17.77220	18.22145	18.78974	19.47217	20.26458	21.16390	22.16754	23.27121
5	28.58895	22.93326	23.08023	23.32376	23.66182	24.09182	24.61080	25.21575	25.90387	26.67289	27.52130
6	34.29615	28.62812	28.74539	28.94010	29.21111	29.55696	29.97592	30.46602	31.02524	31.65158	32.34319
7	40.00469	34.32871	34.42630	34.58850	34.81464	35.10384	35.45499	35.86682	36.33799	36.86701	37.45244
8	45.71408	40.03257	40.11615	40.25515	40.44915	40.69757	40.99970	41.35468	41.76157	42.21933	42.72692
9	51.42405	45.73847	45.81156	45.93317	46.10302	46.32071	46.58576	46.89756	47.25544	47.65868	48.10648
10	57.13442	51.44572	51.51066	51.61875	51.76979	51.96351	52.19953	52.47744	52.79675	53.15692	53.55737

$\eta = 0.5$

n =	0	1	2	3	4	5	6	7	8	9	10
1	6.393150	1.354667	2.681205	3.957756	5.175224	6.338890	7.462150	8.558631	9.638221	10.70710	11.76885
2	12.62470	6.564949	7.062583	7.840110	8.836433	9.985862	11.22699	12.50946	13.79844	15.06462	16.30315
3	18.88892	12.70642	12.94940	13.34760	13.89228	14.57363	15.38192	16.30771	17.34064	18.46707	19.66825
4	25.16240	18.94266	19.10315	19.36843	19.73535	20.20002	20.75803	21.40493	22.13652	22.94925	23.84021
5	31.43970	25.20249	25.32242	25.52135	25.79784	26.15000	26.57560	27.07213	27.63700	28.26757	28.96137
6	37.71895	31.47168	31.56748	31.72661	31.94834	32.23165	32.57526	32.97774	33.43752	33.95288	34.52208
7	43.99932	37.74556	37.82532	37.95793	38.14296	38.37981	38.66771	39.00577	39.39298	39.82823	40.31038
8	50.28038	44.02210	44.09043	44.20409	44.36284	44.56626	44.81388	45.10509	45.43924	45.81559	46.23333
9	56.56192	50.30030	50.36006	50.45953	50.59851	50.77674	50.99389	51.24957	51.54328	51.87454	52.24278
10	62.84378	56.57962	56.63272	56.72114	56.84472	57.00331	57.19664	57.42443	57.68635	57.98204	58.31106

$\eta = 0.55$

n =	0	1	2	3	4	5	6	7	8	9	10
1	7.073204	1.306633	2.597709	3.859596	5.083046	6.265296	7.409980	8.524604	9.617271	10.69471	11.76172
2	14.01065	7.211402	7.614814	8.254035	9.090187	10.08152	11.18715	12.36983	13.59793	14.84621	16.09577
3	20.97626	14.07703	14.27466	14.59943	15.04505	15.60399	16.26827	17.03009	17.88227	18.81804	19.83055
4	27.94957	21.02005	21.15099	21.36776	21.66822	22.04964	22.50876	23.04207	23.64589	24.31664	25.05095
5	34.92606	27.98230	28.08026	28.24292	28.46930	28.75817	29.10797	29.51694	29.98313	30.50447	31.07888
6	41.90415	34.95218	35.03047	35.16063	35.34215	35.57437	35.85646	36.18744	36.56618	36.99150	37.46210
7	48.88315	41.92589	41.99109	42.09957	42.25104	42.44509	42.68123	42.95888	43.27735	43.63588	44.03366
8	55.86272	48.90178	48.95764	49.05063	49.18056	49.34717	49.55016	49.78911	50.06363	50.37319	50.71724
9	62.84269	55.87903	55.92789	56.00927	56.12300	56.26895	56.44690	56.65656	56.89765	57.16983	57.47271
10	69.82292	62.85718	62.90061	62.97293	63.07408	63.20391	63.36228	63.54900	63.76387	64.00663	64.27700

$$J_n'(\lambda)Y_n'(\eta\lambda) - J_n'(\eta\lambda)Y_n'(\lambda) = 0$$

$\eta = 0.6$

n=	0	1	2	3	4	5	6	7	8	9	10
1	7.930091	1.262077	2.515937	3.753944	4.969657	6.158805	7.319969	8.454551	9.566093	10.65905	11.73774
2	15.74727	8.041084	8.367073	8.889320	9.582359	10.41872	11.37152	12.41558	13.52802	14.68877	15.88083
3	23.58832	15.80106	15.96146	16.22582	16.58998	17.04868	17.59603	18.22589	18.93225	19.70951	20.55249
4	31.43575	23.62392	23.73040	23.90696	24.15222	24.46443	24.84139	25.28061	25.77948	26.33521	26.94498
5	39.28578	31.46237	31.54212	31.67462	31.85930	32.09537	32.38181	32.71747	33.10105	33.53112	34.00617
6	47.13713	39.30706	39.37081	39.47684	39.62487	39.81446	40.04509	40.31613	40.62688	40.97652	41.36417
7	54.98923	47.15483	47.20793	47.29633	47.41980	47.57814	47.77103	47.99810	48.25890	48.55294	48.87972
8	62.84178	55.00440	55.04990	55.12566	55.23157	55.36748	55.53318	55.72843	55.95295	56.20644	56.48853
9	70.69466	62.85506	62.89487	62.96117	63.05388	63.17290	63.31809	63.48931	63.68633	63.90895	64.15697
10	78.54776	70.70647	70.74184	70.80078	70.88321	70.98908	71.11826	71.27066	71.44615	71.64456	71.86574

$\eta = 0.65$

n=	0	1	2	3	4	5	6	7	8	9	10
1	9.038246	1.220741	2.437416	3.646049	4.843025	6.025230	7.190437	8.337425	9.466209	10.57789	11.67430
2	17.98383	9.126823	9.388328	9.811180	10.37900	11.07343	11.87610	12.76987	13.73902	14.76938	15.84824
3	26.94928	18.02707	18.15628	18.36983	18.66513	19.03884	19.48699	20.00530	20.58933	21.23461	21.93689
4	35.91994	26.97797	27.06386	27.20649	27.40500	27.65833	27.96511	28.32376	28.73256	29.18961	29.69295
5	44.89273	35.94142	36.00579	36.11281	36.26216	36.45336	36.68579	36.95874	37.27141	37.62287	38.01218
6	53.86657	44.90990	44.96135	45.04702	45.16666	45.32009	45.50693	45.72686	45.97939	46.26406	46.58031
7	62.84102	53.88087	53.92375	53.99513	54.09493	54.22299	54.37911	54.56310	54.77468	55.01356	55.27940
8	71.81586	62.85327	62.89002	62.95122	63.03679	63.14667	63.28072	63.43880	63.62075	63.82637	64.05545
9	80.79094	71.82657	71.85872	71.91228	71.98719	72.08338	72.20081	72.33934	72.49889	72.67931	72.88047
10	89.76621	80.80046	80.82904	80.87665	80.94324	81.02880	81.13324	81.25653	81.39855	81.55924	81.73848

$\eta = 0.7$

n=	0	1	2	3	4	5	6	7	8	9	10
1	10.52202	1.182365	2.962846	3.539604	4.710853	5.874916	7.030296	8.175727	9.310340	10.43357	11.54937
2	20.96938	10.59183	10.79885	11.13634	11.59432	12.16100	12.82402	13.57138	14.39193	15.27559	16.21331
3	31.43293	21.00370	21.10636	21.27642	21.51241	21.81235	22.17385	22.59420	23.07047	23.59964	24.17861
4	41.90067	31.45574	31.52405	31.63759	31.79590	31.99837	32.24420	32.53247	32.86214	33.23204	33.64096
5	52.37009	41.91774	41.96895	42.05416	42.17316	42.32570	42.51145	42.72997	42.98079	43.26340	43.57721
6	62.84037	52.38375	52.42470	52.49288	52.58817	52.71048	52.85959	53.03530	53.23736	53.46547	53.71933
7	73.31112	62.85174	62.88585	62.94268	63.02215	63.12419	63.24869	63.39552	63.56454	63.75558	63.96845
8	83.78218	73.32088	73.35011	73.39882	73.46696	73.55449	73.66132	73.78739	73.93261	74.09685	74.28002
9	94.25345	83.79072	83.81630	83.85893	83.91857	83.99519	84.08875	84.19917	84.32643	84.47043	84.63109
10	104.7248	94.26103	94.28377	94.32167	94.37468	94.44280	94.52601	94.62426	94.73748	94.86566	95.00872

$$J_n'(\lambda)Y_n'(\eta\lambda) - J_n'(\eta\lambda)Y_n'(\lambda) = 0$$

$\eta = 0.75$

n =	0	1	2	3	4	5	6	7	8	9	10
1	12.60559	1.146659	2.292533	3.436866	4.578895	5.717872	6.305306	7.983833	9.109535	10.22963	11.34368
2	25.15256	12.65946	12.81982	13.08306	13.44365	13.89469	14.42850	15.03720	15.71305	16.44883	17.23781
3	37.71235	25.17920	25.25893	25.39130	25.57552	25.81052	26.09500	26.42745	26.80619	27.22936	27.69507
4	50.27542	37.73007	37.78316	37.87151	37.99485	38.15289	38.34515	38.57121	38.83047	39.12233	39.44599
5	62.83980	50.28870	50.32849	50.39478	50.48743	50.60631	50.75126	50.92202	51.11838	51.34005	51.58671
6	75.40485	62.85041	62.88225	62.93529	63.00947	63.10471	63.22093	63.35802	63.51584	63.69424	63.89307
7	87.97027	75.41369	75.44022	75.48443	75.54626	75.62569	75.72268	75.83712	75.96898	76.11814	76.28451
8	100.5359	87.97785	88.00059	88.03848	88.09149	88.15961	88.24280	88.34102	88.45421	88.58232	88.72530
9	113.1017	100.5425	100.5624	100.5956	100.6420	100.7016	100.7744	100.8604	100.9596	101.0718	101.1971
10	125.6676	113.1076	113.1253	113.1548	113.1960	113.2490	113.3138	113.3903	113.4784	113.5783	113.6898

$\eta = 0.8$

n =	0	1	2	3	4	5	6	7	8	9	10
1	15.73755	1.113365	2.226463	3.338996	4.450721	5.561363	6.670631	7.778297	8.884071	9.987724	11.08901
2	31.43080	15.77771	15.89761	16.09556	16.36887	16.71405	17.12700	17.60323	18.13810	18.72692	19.36516
3	47.13382	31.45074	31.51051	31.60985	31.74843	31.92572	32.14115	32.39392	32.68325	33.00815	33.36765
4	62.83935	47.14709	47.18691	47.25319	47.34582	47.46467	47.60951	47.78016	47.97631	48.19767	48.44391
5	78.54578	62.84926	62.87911	62.92883	62.99837	63.08767	63.19665	63.32521	63.47322	63.64057	63.82709
6	94.25274	78.55373	78.57760	78.61740	78.67305	78.74456	78.83188	78.93493	79.05368	79.18807	79.33797
7	109.9600	94.25937	94.27927	94.31242	94.35882	94.41844	94.49125	94.57723	94.67635	94.78856	94.91381
8	125.6674	109.9656	109.9827	110.0111	110.0509	110.1020	110.1644	110.2382	110.3232	110.4195	110.5271
9	141.3749	125.6724	125.6873	125.7121	125.7469	125.7917	125.8463	125.9109	125.9854	126.0697	126.1639
10	157.0826	141.3794	141.3926	141.4147	141.4457	141.4854	141.5340	141.5914	141.6576	141.7326	141.8164

$\eta = 0.85$

n =	0	1	2	3	4	5	6	7	8	9	10
1	20.96492	1.082252	2.164436	3.246467	4.328270	5.409782	6.490913	7.571586	8.651740	9.731315	10.81020
2	41.89841	20.99314	21.07759	21.21763	21.41219	21.65984	21.95882	22.30716	22.70264	23.14293	23.62561
3	62.83886	41.91248	41.95463	42.02480	42.12284	42.24855	42.40170	42.58202	42.78912	43.02266	43.28221
4	83.78106	62.84823	62.87632	62.92312	62.98858	63.07263	63.17522	63.29625	63.43562	63.59323	63.76886
5	104.7239	83.78809	83.80915	83.84425	83.89337	83.95648	84.03351	84.12454	84.22940	84.34811	84.48057
6	125.6672	104.7295	104.7464	104.7745	104.8138	104.8643	104.9260	104.9989	105.0829	105.1780	105.2843
7	146.6106	125.6719	125.6858	125.7093	125.7421	125.7841	125.8356	125.8964	125.9664	126.0458	126.1345
8	167.5542	146.6146	146.6267	146.6467	146.6748	146.7109	146.7550	146.8071	146.8669	146.9353	147.0113
9	188.4978	167.5577	167.5682	167.5858	167.6103	167.6419	167.6805	167.7261	167.7787	167.8383	167.9049
10	209.4416	188.5010	188.5103	188.5259	188.5478	188.5758	188.6101	188.6507	188.6975	188.7505	188.8097

$$J_n'(\lambda)Y_n'(\eta\lambda) - J_n'(\eta\lambda)Y_n'(\lambda) = 0$$

$\eta = 0.9$

n =	0	1	2	3	4	5	6	7	8	9	10
1	31.42915	1.053123	2.106224	3.159294	4.212333	5.265327	6.318244	7.371086	8.423835	9.476493	10.52903
2	62.83845	31.44687	31.49997	31.58828	31.71151	31.86925	32.06101	32.28619	32.54411	32.83402	33.15514
3	94.25215	62.84730	62.87383	62.91802	62.97985	63.05924	63.15615	63.27049	63.40216	63.55106	63.71707
4	125.6669	94.25805	94.27573	94.30520	94.34644	94.39944	94.46418	94.54062	94.62876	94.72855	94.83995
5	157.0822	125.6713	125.6846	125.7067	125.7376	125.7774	125.8260	125.8834	125.9496	126.0246	126.1083
6	188.4976	157.0857	157.0963	157.1140	157.1388	157.1706	157.2095	157.2554	157.3084	157.3684	157.4355
7	219.9132	188.5006	188.5094	188.5242	188.5448	188.5713	188.6037	188.6420	188.6862	188.7362	188.7922
8	251.3289	219.9158	219.9233	219.9360	219.9537	219.9764	220.0042	220.0370	220.0749	220.1178	220.1657
9	282.7446	251.3311	251.3378	251.3488	251.3643	251.3842	251.4085	251.4372	251.4703	251.5079	251.5499
10	314.1604	282.7466	282.7525	282.7623	282.7761	282.7938	282.8154	282.8409	282.8704	282.9038	282.9411

$\eta = 0.95$

n =	0	1	2	3	4	5	6	7	8	9	10
1	62.83807	1.025749	2.051506	3.077262	4.103004	5.128746	6.154487	7.180229	8.205970	9.231697	10.25742
2	125.6667	62.84645	62.87158	62.91345	62.97203	63.04725	63.13908	63.24742	63.37221	63.51334	63.67070
3	188.4974	125.6709	125.6834	125.7044	125.7337	125.7714	125.8174	125.8718	125.9345	126.0055	126.0849
4	251.3287	188.5002	188.5086	188.5226	188.5421	188.5672	188.5979	188.6342	188.6760	188.7235	188.7765
5	314.1602	251.3308	251.3371	251.3475	251.3622	251.3810	251.4041	251.4313	251.4627	251.4983	251.5380
6	376.9917	314.1618	314.1669	314.1752	314.1870	314.2020	314.2205	314.2422	314.2674	314.2959	314.3277
7	439.8234	376.9931	376.9973	377.0043	377.0141	377.0266	377.0420	377.0602	377.0811	377.1048	377.1313
8	502.6551	439.8246	439.8282	439.8342	439.8425	439.8533	439.8665	439.8820	439.9000	439.9203	439.9430
9	565.4868	502.6561	502.6593	502.6645	502.6718	502.6813	502.6928	502.7064	502.7221	502.7399	502.7598
10	628.3185	565.4877	565.4905	565.4951	565.5017	565.5100	565.5203	565.5324	565.5463	565.5621	565.5798

THE INCOMPLETE BETA FUNCTION AND ITS RATIO TO THE COMPLETE BETA FUNCTION

David Osborn and Richard Madey

The functions tabulated are:

The incomplete beta function = BXPQ = $\int_0^X Y^{P-1}(1-Y)^{Q-1}\,dY$ $(0 \leq X \leq 1)$.

The incomplete beta quotient = IXPQ = BXPQ/BPQ

where BPQ is the complete beta function. The above integral becomes the complete beta function when the upper limit X = 1. These two functions are tabulated for the arguments P, Q = 0.5(0.1) 2, and for the parameter X = 0.1(0.1) 1.

TABLE 1

THE INCOMPLETE BETA FUNCTION AND ITS RATIO TO THE COMPLETE BETA FUNCTION

X = 0.10 TO 1.00 = 0.50 Q = 0.50 TO 2.00

	Q = 0.50		Q = [illegible]		Q = 0.70		Q = 0.80	
X	BXPQ	IXPQ	BXPQ	IXPQ	BXPQ	IXPQ	BXPQ	IXPQ
.10	.64350	.20483	.64126	.23113	.63904	.25503	.63683	.27697
.20	.92729	.29517	.92054	.33179	.91388	.36471	.90731	.39461
.30	1.15927	.36901	1.14597	.41304	1.13293	.45213	1.12018	.48719
.40	1.36943	.43591	1.34726	.48559	1.32575	.52908	1.30466	.56731
.50	1.57079	.50000	1.53691	.55395	1.50438	.60036	1.47312	.64069
.60	1.77214	.56409	1.72277	.62093	1.67595	.66883	1.63150	.70957
.70	1.98230	.63099	1.91189	.68910	1.84616	.73676	1.78470	.77620
.80	2.21428	.70483	2.11363	.76181	2.02162	.80678	1.93732	.84258
.90	2.49807	.79517	2.34760	.84614	2.21458	.88379	2.09653	.91183
1.00	3.14157	1.00000	2.77448	1.00000	2.50578	1.00000	2.29927	1.00000

	Q = 0.90		Q = 1.00		Q = 1.10		Q = 1.20	
X	BXPQ	IXPQ	BXPQ	IXPQ	BXPQ	IXPQ	BXPQ	IXPQ
.10	.63463	.29729	.63246	.31623	.63029	.33398	.62814	.35071
.20	.90082	.42198	.89443	.44721	.88811	.47060	.88188	.49233
.30	1.10768	.51888	1.09545	.54772	1.08346	.57411	1.07172	.59838
.40	1.28458	.60175	1.26491	.63246	1.24580	.66014	1.22724	.68521
.50	1.44308	.67600	1.41421	.70711	1.38645	.73466	1.35972	.75918
.60	1.58929	.74449	1.54919	.77460	1.51107	.80070	1.47478	.82342
.70	1.72718	.80908	1.67332	.83666	1.62281	.85991	1.57538	.87959
.80	1.85997	.87128	1.78655	.89443	1.72335	.91318	1.66288	.92844
.90	1.99138	.93284	1.89736	.94868	1.81299	.96068	1.73696	.98960
1.00	2.13474	1.00000	2.00000	1.00000	1.88719	1.00000	1.79105	1.00000

	Q = 1.30		Q = 1.40		Q = 1.50		Q = 1.60	
X	BXPQ	IXPQ	BXPQ	IXPQ	BXPQ	IXPQ	BXPQ	IXPQ
.10	.62600	.36653	.62387	.38154	.62176	.39582	.61965	.40945
.20	.87573	.51274	.86965	.53165	.86365	.54982	.85773	.56677
.30	1.06022	.62077	1.04895	.64150	1.03791	.66075	1.02708	.67867
.40	1.20919	.70799	1.19166	.72877	1.17463	.74779	1.15807	.76522
.50	1.33401	.78107	1.30925	.80069	1.28541	.81831	1.26243	.83419
.60	1.44024	.84327	1.40734	.86068	1.37598	.87597	1.34607	.88946
.70	1.53082	.89630	1.48890	.91055	1.44942	.92273	1.41221	.93316
.80	1.60698	.94090	1.55520	.95110	1.50715	.95948	1.46248	.96638
.90	1.66822	.97675	1.60585	.98207	1.54905	.98615	1.49716	.98929
1.00	1.70792	1.00000	1.63516	1.00000	1.57080	1.00000	1.51337	1.00000

	Q = 1.70		Q = 1.80		Q = 1.90		Q = 2.00	
X	BXPQ	IXPQ	BXPQ	IXPQ	BXPQ	IXPQ	BXPQ	IXPQ
.10	.61757	.42249	.61549	.43499	.61343	.44699	.61137	.45853
.20	.85189	.58280	.84612	.59798	.84042	.61240	.83480	.62610
.30	1.01648	.69540	1.00608	.71103	.99590	.72569	.98590	.73943
.40	1.14196	.78124	1.12630	.79600	1.11108	.80962	1.09626	.82219
.50	1.24030	.84852	1.21896	.86148	1.19838	.87323	1.17851	.88388
.60	1.31754	.90136	1.29029	.91189	1.26425	.92123	1.23935	.92952
.70	1.37710	.94211	1.34393	.94981	1.31257	.95644	1.28288	.96216
.80	1.42089	.97206	1.38207	.97676	1.34580	.98065	1.31183	.98387
.90	1.44960	.99170	1.40585	.99357	1.36550	.99500	1.32816	.99612
1.00	1.46172	1.00000	1.41495	1.00000	1.37235	1.00000	1.33333	1.00000