

Struve Function of Order Three-Halves¹

The Struve functions of half-integral order appear, among other places, in radiation problems with spherical symmetry. They can be generated by recurrence:

$$H_{1/2}(x) = \left(\frac{2}{\pi x}\right)^{1/2} (1 - \cos x)$$

$$H_{3/2}(x) = \left(\frac{x}{2\pi}\right)^{1/2} \left(1 + \frac{2}{x^2}\right) - \left(\frac{2}{\pi x}\right)^{1/2} \left(\sin x + \frac{\cos x}{x}\right)$$

$$H_{\nu-1}(x) + H_{\nu+1}(x) = \frac{2\nu}{x} H_{\nu}(x) + \frac{(x/2)^{\nu}}{\Gamma(\nu + \frac{3}{2})\Gamma(\frac{1}{2})}$$

It is often convenient to use instead of the $H_{\nu}(x)$ the function $h_{\nu}(x)$ defined by

$$h_{\nu}(x) = \left(\frac{2\pi}{x}\right)^{1/2} H_{\nu}(x).$$

These satisfy the recurrence relations

$$h_{1/2}(x) = \frac{2}{x} (1 - \cos x), \quad h_{3/2}(x) = \left(1 + \frac{2}{x^2}\right)$$

$$- \frac{2}{x} \left(\sin x + \frac{\cos x}{x}\right)$$

$$h_{\nu-1}(x) + h_{\nu+1}(x) = \frac{2\nu}{x} h_{\nu}(x) + \frac{(\frac{1}{2}x)^{\nu-\frac{1}{2}}}{(\nu + \frac{1}{2})!}$$

The calculation of the present table of $h_{3/2}(x)$ was suggested by E. W. Montroll. The fraction of energy scattered from a plane wave by a spherical obstacle when its wave transmission characteristics are not too different from those of the external medium is given by $h_{3/2}(x)$. The limiting behavior of $h_{3/2}(x)$ is given by

$$\lim_{x \rightarrow 0} h_{3/2}(x) = 0, \quad \lim_{x \rightarrow \infty} h_{3/2}(x) = 1.$$

¹ The preparation of this table was done under the supervision of Ethel Marden by Kathryn Christoph, Anne Futterman, Renee Jasper, Sally Tsingou, and Bernard Urban, of the Bureau's Computation Laboratory.

This function has been tabulated for $x=0(.02)15$ to 10 decimal places. The values are expected to be correct to within one unit of the last place. The table is also available on IBM cards.

Central differences, modified where necessary, have been provided. Modification has been indicated by the letter C printed after the number; the minus sign is printed after the number, and after the C in the case of a negative modified second difference. These unusual conventions were adopted so that the complete tabulation could be made mechanically.

To interpolate in this table to the full accuracy of ten decimals, it suffices to employ the Everett interpolation formula as far as the terms δ^2 . Here the modified second central differences are to be employed in Everett's formula just as though they were not modified. Everett's formula is

$$f(x_0 + ph) = pf(x_1) + qf(x_0)$$

$$- \frac{p(1-p^2)}{6} \delta^2 f(x_1) - \frac{q(1-q^2)}{6} \delta^2 f(x_0),$$

where $x = x_0 + ph$ is between x_0 and $x_1 = x_0 + h$, $q = 1 - p$, $\delta^2 f(x_i)$ is the second central difference tabulated alongside $f(x_i)$, $i=0,1$, and here the tabular interval $h=0.02$. If one neglects the terms in δ^2 , which is what is done in ordinary linear interpolation, an upper bound for the error is one-eighth of the second difference.

The entire computation of this table was done on the SEAC. The code employed subroutines for the sine and cosine functions. The actual calculation of the table by the SEAC and its transfer upon magnetic wire required only 15 minutes. This present copy of the table was prepared from the magnetic wire by the flexowriter.

This tabulation was used for the training of new staff. Three codes were prepared independently. The results of the three processes were compared and minor discrepancies due to different methods employed in the codes, were investigated and reconciled.

x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$	x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$
0.00	0 00000 00000	2000054C	1.00	0 23645 34186	1373940C
.02	0 00009 99978	1999787C	.02	0 24545 14924	1350303C
.04	0 00039 99644	1998987C	.04	0 25458 45903	1326327C
.06	0 00089 98200	1997654C	.06	0 26385 03148	1302019C
.08	0 00159 94312	1995789C	.08	0 27324 62352	1277386C
.10	0 00249 86114	1993391C	.10	0 28276 98884	1252435C
.12	0 00359 71210	1990462C	.12	0 29241 87795	1227174C
.14	0 00489 46671	1987001C	.14	0 30219 03824	1201611C
.16	0 00639 09035	1983017C	.16	0 31203 21409	1175752C
.18	0 00808 54318	1978494C	.18	0 32209 14694	1149606C
.20	0 00997 77999	1973455C	.20	0 33221 57533	1123180C
.22	0 01206 75038	1967883C	.22	0 34245 23501	1096482C
.24	0 01435 39863	1961790C	.24	0 35279 85903	1069520C
.26	0 01683 66382	1955176C	.26	0 36325 17778	1042302C
.28	0 01951 47932	1948041C	.28	0 37380 91909	1014836C
.30	0 02238 77528	1940389C	.30	0 38446 80832	987130C
.32	0 02545 47367	1932221C	.32	0 39522 56343	959193C
.34	0 02871 49333	1923540C	.34	0 40607 92006	931032C
.36	0 03216 74744	1914349C	.36	0 41702 58162	902656C
.38	0 03581 14411	1904649C	.38	0 42806 26935	874074C
.40	0 03964 58634	1894446C	.40	0 43918 69746	845292C
.42	0 04366 97211	1883740C	.42	0 45039 57314	816322C
.44	0 04788 19437	1872537C	.44	0 46168 62171	787169C
.46	0 05228 14109	1860838C	.46	0 47305 53665	757844C
.48	0 05686 69528	1848648C	.48	0 48450 02973	728355C
.50	0 06163 73505	1835969C	.50	0 49601 80608	698711C
.52	0 06659 13361	1822806C	.52	0 50760 56927	668920C
.54	0 07172 75936	1809163C	.54	0 51926 02140	638990C
.56	0 07704 47566	1795044C	.56	0 53097 86320	608932C
.58	0 08254 14194	1780453C	.58	0 54275 79409	578753C
.60	0 08821 61170	1765395C	.60	0 55459 51230	548462C
.62	0 09406 73455	1749873C	.62	0 56648 71494	518069C
.64	0 10009 35529	1733894C	.64	0 57843 09810	487532C
.66	0 10629 31414	1717460C	.66	0 59042 35662	457009C
.68	0 11266 44676	1700578C	.68	0 60246 18570	426361C
.70	0 11920 58435	1683252C	.70	0 61454 27796	395646C
.72	0 12591 55364	1665487C	.72	0 62666 32658	364373C
.74	0 13279 17701	1647290C	.74	0 63882 02383	334050C
.76	0 13983 27250	1628664C	.76	0 65101 06151	303187C
.78	0 14703 65335	1609617C	.78	0 66323 13101	272293C
.80	0 15440 13060	1590153C	.80	0 67547 92340	241375
.82	0 16192 50813	1570278C	.82	0 68775 12954	210447
.84	0 16960 58769	1549998C	.84	0 70004 44014	179514
.86	0 17744 16651	1529320C	.86	0 71235 54588	148537
.88	0 18543 03780	1508249C	.88	0 72468 13750	117663C
.90	0 19356 99088	1486792C	.90	0 73701 90583	86775C
.92	0 20185 81118	1464955C	.92	0 74936 54197	55913C
.94	0 21029 28035	1442745C	.94	0 76171 73732	25091C
.96	0 21887 17629	1420168C	.96	0 77407 13368	5631C-
.98	0 22759 27325	1397231C	.98	0 78642 57333	36395C-
1.00	0 23645 34186	1373940C	2.00	0 79877 59914	67043C-

x		$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$	x		$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$
2.00	0	79877 59914	67043C-	3.00	1	34814 05494	1335328C-
.02	0	81111 95467	97615C-	.02	1	35663 15264	1352308C-
.04	0	82345 33421	128102C-	.04	1	36498 72803	1368862C-
.06	0	83577 43289	158497C-	.06	1	37320 61560	1384985C-
.08	0	84807 94679	188789C-	.08	1	38128 65412	1400673C-
.10	0	86036 57300	218972C-	.10	1	38922 68672	1415924C-
.12	0	87263 00971	249035C-	.12	1	39702 56089	1430732C-
.14	0	88486 95631	278970C-	.14	1	40468 12856	1445095C-
.16	0	89708 11347	308769C-	.16	1	41219 24610	1459009C-
.18	0	90926 18319	338424C-	.18	1	41955 77439	1472471C-
.20	0	92140 86896	367926C-	.20	1	42677 57880	1485479C-
.22	0	93351 87577	397266C-	.22	1	43384 52927	1498029C-
.24	0	94558 91023	426437C-	.24	1	44076 50029	1510118C-
.26	0	95761 68065	455429C-	.26	1	44753 37098	1521745C-
.28	0	96959 89712	484236C-	.28	1	45415 02507	1532906C-
.30	0	98153 27153	512849C-	.30	1	46061 35097	1543599C-
.32	0	99341 51792	541259C-	.32	1	46692 24175	1553822C-
.34	1	00524 35206	569460C-	.34	1	47307 59518	1563574C-
.36	1	01701 49200	597442C-	.36	1	47907 31374	1572851C-
.38	1	02872 65793	625199C-	.38	1	48491 30466	1581654C-
.40	1	04037 57230	652722C-	.40	1	49059 47992	1589979C-
.42	1	05195 95989	680004C-	.42	1	49611 75628	1597826C-
.44	1	06347 54791	707037C-	.44	1	50148 05525	1605193C-
.46	1	07492 06602	733814C-	.46	1	50668 30318	1612080C-
.48	1	08629 24648	760327C-	.48	1	51172 43120	1618485C-
.50	1	09758 82417	786570C-	.50	1	51660 37525	1624408C-
.52	1	10880 53667	812534C-	.52	1	52132 07611	1629848C-
.54	1	11994 12435	838213C-	.54	1	52587 47939	1634804C-
.56	1	13099 33044	863600C-	.56	1	53026 53552	1639276C-
.58	1	14195 90108	888688C-	.58	1	53449 19978	1643264C-
.60	1	15283 58540	913469C-	.60	1	53855 43229	1646768C-
.62	1	16362 13561	937939C-	.62	1	54245 19800	1649789C-
.64	1	17431 30701	962088C-	.64	1	54618 46672	1652325C-
.66	1	18490 85814	985912C-	.66	1	54975 21308	1654378C-
.68	1	19540 55075	1009404C-	.68	1	55315 41654	1655949C-
.70	1	20580 14994	1032557C-	.70	1	55639 06140	1657037C-
.72	1	21609 42420	1055366C-	.72	1	55946 13678	1657644C-
.74	1	22628 14544	1077824C-	.74	1	56236 63659	1657772C-
.76	1	23636 08909	1099925C-	.76	1	56510 55958	1657420C-
.78	1	24633 03416	1121664C-	.78	1	56767 90924	1656590C-
.80	1	25618 76327	1143035C-	.80	1	57008 69387	1655284C-
.82	1	26593 06272	1164032C-	.82	1	57232 92653	1653504C-
.84	1	27555 72254	1184650C-	.84	1	57440 62503	1651251C-
.86	1	28506 53658	1204883C-	.86	1	57631 81188	1648526C-
.88	1	29445 30250	1224726C-	.88	1	57806 51432	1645333C-
.90	1	30371 82189	1244175C-	.90	1	57964 76430	1641673C-
.92	1	31285 90026	1263224C-	.92	1	58106 59840	1637548C-
.94	1	32187 34713	1281868C-	.94	1	58232 05786	1632962C-
.96	1	33075 97608	1300103C-	.96	1	58341 18856	1627915C-
.98	1	33951 60475	1317925C-	.98	1	58434 04094	1622413C-
3.00	1	34814 05494	1335328C-	4.00	1	58510 67003	1616456C-

x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$	x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$
4.00	1 58510 67003	1616456C-	5.00	1 44087 67350	838738C-
.02	1 58571 13539	1610048C-	.02	1 43503 88632	816160C-
.04	1 58615 50109	1603193C-	.04	1 42911 93783	793426C-
.06	1 58643 83569	1595893C-	.06	1 42312 05535	770543C-
.08	1 58656 21217	1588152C-	.08	1 41704 46771	747519C-
.10	1 58652 70793	1579973C-	.10	1 41089 40513	724362C-
.12	1 58633 40477	1571361C-	.12	1 40467 09916	701079C-
.14	1 58593 38879	1562318C-	.14	1 39837 78262	677678C-
.16	1 58547 75041	1552849C-	.16	1 39201 68950	654167C-
.18	1 58481 58432	1542959C-	.18	1 38559 05490	630554C-
.20	1 58399 98940	1532650C-	.20	1 37910 11493	606846C-
.22	1 58303 06875	1521927C-	.22	1 37255 10666	583051C-
.24	1 58190 92958	1510796C-	.24	1 36594 26801	559178C-
.26	1 58063 68320	1499259C-	.26	1 35927 83773	535232C-
.28	1 57921 44497	1487322C-	.28	1 35256 05523	511223C-
.30	1 57764 33424	1474990C-	.30	1 34579 16061	487159C-
.32	1 57592 47432	1462268C-	.32	1 33897 39448	463046C-
.34	1 57405 99242	1449160C-	.34	1 33210 99797	438894C-
.36	1 57205 01963	1435672C-	.36	1 32520 21258	414708C-
.38	1 56989 69081	1421809C-	.38	1 31825 28016	390495 -
.40	1 56760 14458	1407575C-	.40	1 31126 44278	366270 -
.42	1 56516 52327	1392978C-	.42	1 30423 94270	342035 -
.44	1 56253 97284	1378021C-	.44	1 29718 02227	317799 -
.46	1 55937 64285	1362711C-	.46	1 29008 92385	293569 -
.48	1 55702 68640	1347053C-	.48	1 28296 88974	269349C-
.50	1 55404 26004	1331054C-	.50	1 27582 16209	245153C-
.52	1 55092 52376	1314719C-	.52	1 26864 98286	220987C-
.54	1 54767 64089	1298054C-	.54	1 26145 59369	196857C-
.56	1 54429 77808	1281065C-	.56	1 25424 23587	172771C-
.58	1 54079 10520	1263759C-	.58	1 24701 15024	148738C-
.60	1 53715 79531	1246141C-	.60	1 23976 57713	124763C-
.62	1 53340 02456	1228219C-	.62	1 23250 75626	100856C-
.64	1 52951 97218	1209998C-	.64	1 22523 92670	77022C-
.66	1 52551 82036	1191484C-	.66	1 21796 32676	53271C-
.68	1 52139 75422	1172686C-	.68	1 21068 19396	29608C-
.70	1 51715 96174	1153609C-	.70	1 20339 76490	6041C-
.72	1 51280 63367	1134259C-	.72	1 19611 27524	17422C
.74	1 50833 96349	1114645C-	.74	1 18882 95960	40775C
.76	1 50376 14733	1094772C-	.76	1 18155 05150	64010C
.78	1 49907 38392	1074648C-	.78	1 17427 78326	87120C
.80	1 49427 87447	1054280C-	.80	1 16701 38599	110099C
.82	1 48937 82266	1033674C-	.82	1 15976 08945	132939C
.84	1 48437 43454	1012838C-	.84	1 15252 12204	155633C
.86	1 47926 91844	991779C-	.86	1 14529 71067	178175C
.88	1 47406 48495	970505C-	.88	1 13809 08077	200558C
.90	1 46876 34679	949022C-	.90	1 13090 45614	222776C
.92	1 46336 71879	927337C-	.92	1 12374 05896	244820C
.94	1 45787 81777	905460C-	.94	1 11660 10965	266887C
.96	1 45229 86250	883395C-	.96	1 10948 82686	288367C
.98	1 44663 07361	861152C-	.98	1 10240 42739	309856C
5.00	1 44037 67350	838738C-	6.00	1 09535 12613	331148C

x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$	x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$
6.00	1 09535 12613	331148C	7.00	0 82233 43492	1033118C
.02	1 08833 13596	352235C	.02	0 81909 33114	1038355C
.04	1 08134 66775	373111C	.04	0 81595 61022	1043213C
.06	1 07439 93026	393772C	.06	0 81292 32073	1047693C
.08	1 06749 13008	414210C	.08	0 80999 50747	1051794C
.10	1 06062 47158	434420C	.10	0 80717 21146	1055517C
.12	1 05380 15686	454397C	.12	0 80445 46992	1058862C
.14	1 04702 38566	474133C	.14	0 80184 31630	1061828C
.16	1 04029 35534	493625C	.16	0 79933 78027	1064417C
.18	1 03361 26082	512866C	.18	0 79693 88771	1066629C
.20	1 02698 29449	531852C	.20	0 79464 66075	1068464C
.22	1 02040 64619	550576C	.22	0 79246 11773	1069924C
.24	1 01388 50316	569033C	.24	0 79038 27327	1071009C
.26	1 00742 04997	587219C	.26	0 78841 13821	1071720C
.28	1 00101 46846	605129C	.28	0 78654 71966	1072059C
.30	0 99466 93772	622757C	.30	0 78479 02102	1072027C
.32	0 98838 63403	640099C	.32	0 78314 04198	1071625C
.34	0 98216 73080	657151C	.34	0 78159 77849	1070854C
.36	0 97601 39853	673907C	.36	0 78016 22288	1069717C
.38	0 96992 80478	690364C	.38	0 77883 36377	1068215C
.40	0 96391 11411	706516C	.40	0 77761 18613	1066350C
.42	0 95796 48804	722360C	.42	0 77649 67134	1064124C
.44	0 95209 08499	737892C	.44	0 77548 79712	1061539C
.46	0 94629 06027	753107C	.46	0 77458 53764	1058598C
.48	0 94056 56605	768003C	.48	0 77378 86349	1055302C
.50	0 93491 75125	782574C	.50	0 77309 74171	1051654C
.52	0 92934 76159	796818C	.52	0 77251 13583	1047658C
.54	0 92385 73951	810731C	.54	0 77203 00589	1043314C
.56	0 91844 82411	824309C	.56	0 77165 30846	1038627C
.58	0 91312 15118	837549C	.58	0 77137 99668	1033599C
.60	0 90787 85312	850449C	.60	0 77121 02026	1028233C
.62	0 90272 05891	863005C	.62	0 77114 32555	1022532C
.64	0 89764 89411	875214C	.64	0 77117 85556	1016500C
.66	0 89266 48081	887073C	.66	0 77131 54997	1010140C
.68	0 88776 93759	898580C	.68	0 77155 34518	1003455C
.70	0 88296 37952	909733C	.70	0 77189 17435	996449C
.72	0 87824 91812	920528C	.72	0 77232 96742	989125C
.74	0 87362 66134	930964C	.74	0 77286 65116	981487C
.76	0 86909 71352	941038C	.76	0 77350 14920	973539C
.78	0 86466 17542	950743C	.78	0 77423 38206	965235C
.80	0 86032 14413	960094C	.80	0 77506 26721	956729C
.82	0 85607 71310	969072C	.82	0 77598 71910	947874C
.84	0 85192 97210	977630C	.84	0 77700 64919	938726C
.86	0 84788 00723	985919C	.86	0 77811 96601	929288C
.88	0 84392 90087	993786C	.88	0 77932 57519	919565C
.90	0 84007 73168	1001280C	.90	0 78062 37951	909562C
.92	0 83632 57459	1008399C	.92	0 78201 27893	899282C
.94	0 83267 50082	1015144C	.94	0 78349 17068	888730C
.96	0 82912 57778	1021512C	.96	0 78505 94923	877912C
.98	0 82567 86918	1027504C	.98	0 78671 50642	866831C
7.00	0 82233 43492	1033118C	8.00	0 78845 73144	855493C

x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$	x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$
8.00	0 78345 73144	855493C	9.00	0 95560 65159	83205C
.02	0 79028 51092	843902C	.02	0 95985 71665	66289C
.04	0 79219 72897	832064C	.04	0 96411 44468	49420C
.06	0 79419 26722	819984C	.06	0 96837 66701	32605C
.08	0 79627 00486	807666C	.08	0 97264 21551	15849C
.10	0 79842 81873	795116C	.10	0 97690 92261	842C-
.12	0 80066 58336	782340C	.12	0 98117 62142	17462C-
.14	0 80298 17096	769342C	.14	0 98544 14575	34006C-
.16	0 80537 45159	756127C	.16	0 98970 33017	50467C-
.18	0 80784 29310	742702C	.18	0 99396 01009	66841C-
.20	0 81038 56126	729072C	.20	0 99821 02177	83121C-
.22	0 81300 11977	715242C	.22	1 00245 20242	99302C-
.24	0 81568 83035	701218C	.24	1 00668 39025	115379C-
.26	0 81844 55277	687006C	.26	1 01090 42448	131346C-
.28	0 82127 14491	672611C	.28	1 01511 14547	147198C-
.30	0 82416 46284	658039C	.30	1 01930 39470	162930C-
.32	0 82712 36084	643296C	.32	1 02348 01486	178536C-
.34	0 83014 69149	628387C	.34	1 02763 84990	194011C-
.36	0 83323 30572	613319C	.36	1 03177 74509	209350C-
.38	0 83638 05286	598097C	.38	1 03589 54703	224548C-
.40	0 83958 78069	582727C	.40	1 03999 10376	239600C-
.42	0 84285 33553	567216C	.42	1 04406 26477	254501C-
.44	0 84617 56228	551569C	.44	1 04810 88105	269247C-
.46	0 84955 30448	535792C	.46	1 05212 80516	283832C-
.48	0 85298 40437	519892C	.48	1 05611 89124	298252C-
.50	0 85646 70296	503873C	.50	1 06007 99513	312502C-
.52	0 86000 04008	487744C	.52	1 06400 97431	326577C-
.54	0 86358 25445	471509C	.54	1 06790 68805	340474C-
.56	0 86721 18372	455175C	.56	1 07176 99739	354187C-
.58	0 87088 68457	438747C	.58	1 07559 76521	367713C-
.60	0 87460 53274	422233C	.60	1 07933 85624	381047C-
.62	0 87836 62308	405638C	.62	1 08314 13716	394185C-
.64	0 88216 76967	388969C	.64	1 08685 47661	407123C-
.66	0 88600 80583	372231C	.66	1 09052 74519	419857C-
.68	0 88988 56417	355430C	.68	1 09415 81559	432383C-
.70	0 89379 87672	338574C	.70	1 09774 56256	444697C-
.72	0 89774 57492	321668C	.72	1 10128 86295	456795C-
.74	0 90172 48972	304719C	.74	1 10478 59579	468675C-
.76	0 90573 45163	287732C	.76	1 10823 64229	480332C-
.78	0 90977 29081	270713C	.78	1 11163 88589	491763C-
.80	0 91383 83708	253667	.80	1 11499 21228	502964C-
.82	0 91792 92001	236605	.82	1 11829 50947	513932C-
.84	0 92204 36899	219532	.84	1 12154 66777	524665C-
.86	0 92618 01329	202451	.86	1 12474 57986	535158C-
.88	0 93033 68210	185370	.88	1 12789 14082	545409C-
.90	0 93451 20461	168294	.90	1 13098 24814	555416C-
.92	0 93870 41007	151231	.92	1 13401 80176	565174C-
.94	0 94291 12783	134180C	.94	1 13699 70409	574683C-
.96	0 94713 18743	117157C	.96	1 13991 86006	583938C-
.98	0 95136 41866	100163C	.98	1 14278 17712	592938C-
9.00	0 95560 65159	83205C	10.00	1 14558 56528	601680C-

x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$	x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$
10.00	1 14558 56528	601680C-	11.00	1 19827 21748	687086C-
.02	1 14832 93711	610161C-	.02	1 19750 08239	681902C-
.04	1 15101 20782	618381C-	.04	1 19666 12873	676477C-
.06	1 15363 29521	626335C-	.06	1 19575 41074	670812C-
.08	1 15619 11973	634024C-	.08	1 19477 98507	664910C-
.10	1 15868 60452	641444C-	.10	1 19373 91073	658775C-
.12	1 16111 67536	648593C-	.12	1 19263 24905	652410C-
.14	1 16348 26077	655471C-	.14	1 19146 06369	645818C-
.16	1 16578 29198	662075C-	.16	1 19022 42057	639001C-
.18	1 16801 70293	668405C-	.18	1 18892 38784	631964C-
.20	1 17018 43034	674458C-	.20	1 18756 03583	624709C-
.22	1 17223 41369	680234C-	.22	1 18613 43722	617240C-
.24	1 17431 59520	685731C-	.24	1 18464 66655	609560C-
.26	1 17627 91992	690948C-	.26	1 18309 80067	601674C-
.28	1 17817 33568	695884C-	.28	1 18148 91841	593584C-
.30	1 17999 79312	700539C-	.30	1 17982 10068	585295C-
.32	1 18175 24568	704912C-	.32	1 17809 43037	576809C-
.34	1 18343 64964	709001C-	.34	1 17630 99232	568132C-
.36	1 18504 96411	712807C-	.36	1 17446 87330	559266C-
.38	1 18659 15103	716329C-	.38	1 17257 16196	550216C-
.40	1 18806 17518	719567C-	.40	1 17061 94879	540985C-
.42	1 18946 00418	722521C-	.42	1 16861 32610	531578C-
.44	1 19078 60849	725189C-	.44	1 16655 38795	521999C-
.46	1 19203 96144	727574C-	.46	1 16444 23011	512252C-
.48	1 19322 03917	729673C-	.48	1 16227 95005	502341C-
.50	1 19432 82069	731488C-	.50	1 16006 64688	492270C-
.52	1 19536 28786	733020C-	.52	1 15780 42129	482044C-
.54	1 19632 42534	734267C-	.54	1 15549 37553	471667C-
.56	1 19721 22068	735232C-	.56	1 15313 61337	461144C-
.58	1 19802 66421	735914C-	.58	1 15073 24004	450478C-
.60	1 19876 74913	736314C-	.60	1 14823 36218	439674C-
.62	1 19943 47142	736433C-	.62	1 14579 08782	428737C-
.64	1 20002 82990	736272C-	.64	1 14325 52633	417671C-
.66	1 20054 82617	735832C-	.66	1 14067 78336	406481C-
.68	1 20099 46464	735114C-	.68	1 13805 98579	395172C-
.70	1 20136 75248	734119C-	.70	1 13540 23171	383748C-
.72	1 20166 69964	732848C-	.72	1 13270 64036	372213C-
.74	1 20189 31881	731304C-	.74	1 12997 32707	360573C-
.76	1 20204 62546	729486C-	.76	1 12720 40824	348831C-
.78	1 20212 63774	727398C-	.78	1 12440 00127	336994C-
.80	1 20213 37653	725041C-	.80	1 12156 22454	325065C-
.82	1 20206 86541	722415C-	.82	1 11869 19730	313050C-
.84	1 20193 13062	719525C-	.84	1 11579 03972	300953C-
.86	1 20172 20107	716370C-	.86	1 11285 87274	288779C-
.88	1 20144 10830	712954C-	.88	1 10989 81812	276532C-
.90	1 20108 88648	709278C-	.90	1 10690 99829	264219C-
.92	1 20066 57235	705344C-	.92	1 10389 53639	251843C-
.94	1 20017 20525	701156C-	.94	1 10085 55617	239409C-
.96	1 19960 82705	696715C-	.96	1 99779 18196	226922C-
.98	1 19897 48216	692024C-	.98	1 99470 53861	214388C-
11.00	1 19827 21748	687086C-	12.00	1 09159 75147	201811C-

x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$	x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$
12.00	1 09159 75147	201811C-	13.00	0 93645 42218	378426C
.02	1 03846 94629	189195C-	.02	0 93387 66703	387180C
.04	1 08532 24922	176546C-	.04	0 93133 78336	395759C
.06	1 03215 78674	163869C-	.06	0 92883 85696	404162C
.08	1 07897 68560	151165 -	.08	0 92637 97185	412385C
.10	1 07578 07282	138447 -	.10	0 92396 21024	420425C
.12	1 07257 07557	125715 -	.12	0 92158 65256	428281C
.14	1 06934 82117	112974 -	.14	0 91925 37734	435949C
.16	1 06611 43702	100229 -	.16	0 91696 46126	443428C
.18	1 06287 05059	87485 -	.18	0 91471 97910	450714C
.20	1 05961 78930	74747 -	.20	0 91252 00373	457806C
.22	1 05635 78055	62018 -	.22	0 91036 60605	464701C
.24	1 05309 15162	49306 -	.24	0 90825 85503	471398C
.26	1 04982 02963	36608C-	.26	0 90619 81761	477894C
.28	1 04654 54151	23939C-	.28	0 90418 55877	484188C
.30	1 04326 81395	11299C-	.30	0 90222 14143	490277C
.32	1 03998 97334	1306C	.32	0 90030 62649	496161C
.34	1 03671 14572	13873C	.34	0 89844 07278	501836C
.36	1 03343 45674	26396C	.36	0 89662 53704	507302C
.38	1 03016 03164	38871C	.38	0 89486 07393	512557C
.40	1 02688 99515	51294C	.40	0 89314 73601	517600C
.42	1 02362 47150	63659C	.42	0 89148 57370	522430C
.44	1 02036 58432	75963C	.44	0 88987 63529	527044C
.46	1 01711 45665	88200C	.46	0 88831 96693	531442C
.48	1 01387 21084	100366C	.48	0 88681 61259	535623C
.50	1 01063 96856	112458C	.50	0 88536 61408	539586C
.52	1 00741 85072	124470C	.52	0 88397 01103	543330C
.54	1 00420 97742	136399C	.54	0 88262 84088	546854C
.56	1 00101 46794	148239C	.56	0 88134 13887	550158C
.58	0 99783 44069	159987C	.58	0 88010 93802	553240C
.60	0 99467 01313	171638C	.60	0 87893 26917	556100C
.62	0 99152 30176	183189C	.62	0 87781 16090	558738C
.64	0 98839 42210	194636C	.64	0 87674 63960	561153C
.66	0 98528 48860	205973C	.66	0 87573 72942	563345C
.68	0 98219 61461	217198C	.68	0 87478 45227	565313C
.70	0 97912 91240	228306C	.70	0 87388 82784	567058C
.72	0 97608 49302	239293C	.72	0 87304 87358	568580C
.74	0 97306 46634	250157C	.74	0 87226 60471	569878C
.76	0 97006 94100	260892C	.76	0 87154 03421	570953C
.78	0 96710 02433	271495C	.78	0 87087 17283	571804C
.80	0 96415 82235	281962C	.80	0 87026 02907	572433C
.82	0 96124 43975	292291C	.82	0 86970 60924	572839C
.84	0 95835 97978	302476C	.84	0 86920 91738	573022C
.86	0 95550 54431	312516C	.86	0 86876 95533	572985C
.88	0 95268 23373	322406C	.88	0 86838 72273	572726C
.90	0 94989 14692	332144C	.90	0 86806 21698	572247C
.92	0 94713 38127	341725C	.92	0 86779 43329	571548C
.94	0 94441 03257	351147C	.94	0 86758 36468	570631C
.96	0 94172 19504	360406C	.96	0 86743 00198	569496C
.98	0 93906 96126	369500C	.98	0 86733 33384	568144C
13.00	0 93645 42218	378426C	14.00	0 86729 34674	566576C

x	$10^{10} h_{\frac{3}{2}}(x)$	$10^{10} \delta^2 h_{\frac{3}{2}}(x)$
14.00	0 86729 34674	566576C
.02	0 86731 02501	564795C
.04	0 86738 35083	562799C
.06	0 86751 30426	560592C
.08	0 86769 86322	558175C
.10	0 86794 00356	555549C
.12	0 86823 69899	552715C
.14	0 86858 92119	549675C
.16	0 86899 63977	546431C
.18	0 86945 82229	542985C
.20	0 86997 43429	539339C
.22	0 87054 43932	535494C
.24	0 87116 79891	531452C
.26	0 87184 47267	527216C
.28	0 87257 41823	522787C
.30	0 87335 59132	518169C
.32	0 87418 94576	513363C
.34	0 87507 43347	508371C
.36	0 87601 00456	503196C
.38	0 87699 60727	497840C
.40	0 87803 18805	492306C
.42	0 87911 69157	486597C
.44	0 88025 06074	480714C
.46	0 88143 23674	474662C
.48	0 88266 15905	468442C
.50	0 88393 76548	462057C
.52	0 88525 99218	455511C
.54	0 88662 77371	448806C
.56	0 88804 04300	441945C
.58	0 88949 73147	434931C
.60	0 89099 76898	427768C
.62	0 89254 08390	420458C
.64	0 89412 60314	413005C
.66	0 89575 25217	405412C
.68	0 89741 95506	397681C
.70	0 89912 63452	389818C
.72	0 90087 21192	381824C
.74	0 90265 60732	373703C
.76	0 90447 73952	365459C
.78	0 90633 52609	357095C
.80	0 90822 88339	348615C
.82	0 91015 72663	340022C
.84	0 91211 96989	331320C
.86	0 91411 52615	322512C
.88	0 91614 30734	313602C
.90	0 91820 22438	304595C
.92	0 92029 18719	295493C
.94	0 92241 10476	286300C
.96	0 92455 88517	277020C
.98	0 92673 43562	267657C
15.00	0 92893 66250	258214C

WASHINGTON, October 21, 1952.