

TABLE ERRATA

544.—MILTON ABRAMOWITZ & IRENE A. STEGUN, Editors, *Handbook of Mathematical Functions with Formulas, Graphs, and Mathematical Tables*, National Bureau of Standards, Applied Mathematics Series, No. 55, U. S. Government Printing Office, Washington, D. C., 1964, and all known reprints.

Recalculation to 15S of Table 17.3, on p. 612, has revealed that a total of 37 of the 136 tabulated 10D values of the parameter m as a function of the period-ratio K'/K are inaccurate in the last decimal. Of these 12 should be increased by a final unit, when $K'/K = 0.30, 0.42, 0.84, 0.96, 1.16, 1.24, 1.32, 1.34, 1.38, 1.40, 1.48$, and 1.58 , while 16 should be decreased by a similar amount, when $K'/K = 0.32, 0.36, 0.52, 0.58, 0.64, 0.68, 0.74, 0.76, 0.78, 0.88, 0.90, 1.18, 1.22, 1.28, 1.46$, and 2.14 . The final digit should be decreased by two units when $K'/K = 0.66, 0.70, 0.72, 0.80, 0.82, 0.92$, and 0.94 , and it should be increased by three units when $K'/K = 0.86$ and 0.98 .

A typographical error in the columnar headings of this table has been noted previously [1].

OVE SKOVGAARD

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1. *Math. Comp.*, v. 28, 1974, p. 1182, MTE 513.

545.—BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, *Mathematical Tables*, v. X: *Bessel Functions, Part II*, Cambridge University Press, Cambridge, 1952.

Table VII, on pp. 220–237, has been recalculated to 15–16S by means of a PL/I version of algorithm BESLRI [1]. Only one error was thereby discovered; namely, the first 11 significant digits of $I_{15}(1.5)$, when rounded, should read 10 58453 4400 instead of 10 58455 4400.

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1. D. J. SOOKNE, "Bessel functions of real argument and integer order," *J. Res. Nat. Bur. Standards Section B*, v. 77, 1973, pp. 125–132.

546.—A. GRAY, G. B. MATHEWS & T. M. MACROBERT, *A Treatise on Bessel Functions and Their Applications to Physics*, Second edition, Macmillan Co., London, 1922, reprinted by Dover Publications, New York, 1966.

A recalculation to 15S of Table IX, on pp. 309–312, by use of a PL/I version of BESLRI [1], has revealed a total of 180 last-place errors, ranging from a single unit to a maximum of 29 units.

Four corrections are required in $I_0(x)$:

x	for	read	x	for	read
2.0	3	4	4.4	50	49
3.0	6	7	6.0	4	5

Eighteen corrections are required in $I_1(x)$:

x	<i>for</i>	<i>read</i>	x	<i>for</i>	<i>read</i>
0.6	6	5	3.8	4	1
0.8	0	1	4.0	1	0
1.0	0	2	4.2	0	1
1.2	2	3	4.6	18	20
1.4	5	4	4.8	3	2
1.8	40	39	5.0	4	5
2.0	3	4	5.6	6	5
2.6	1	0	5.8	7	8
3.0	38	40	6.0	5	6

Twelve corrections are required in $I_2(x)$:

x	<i>for</i>	<i>read</i>	x	<i>for</i>	<i>read</i>
0.2	91	89	2.0	8	9
0.6	8	6	3.0	2	3
0.8	0	2	3.8	2	0
1.4	7	6	4.4	4	3
1.6	6	7	4.6	29	30
1.8	41	38	6.0	2	3

Sixteen corrections are required in $I_3(x)$:

x	<i>for</i>	<i>read</i>	x	<i>for</i>	<i>read</i>
0.6	5	3	3.0	0	6
1.2	8	9	3.8	7	6
1.4	1	0	4.4	2	1
1.6	3	5	4.6	495	501
1.8	6	5	4.8	4	1
2.2	3	2	5.0	1	2
2.4	2	3	5.8	1	2
2.6	5	4	6.0	4	5

Sixteen corrections are required in $I_4(x)$:

x	<i>for</i>	<i>read</i>	x	<i>for</i>	<i>read</i>
0.2	7	5	3.0	6	8
0.4	4	3	3.6	6	7
0.6	20	18	3.8	2	1
1.0	4	5	4.6	5	8
1.2	7	8	4.8	30	28
1.8	21	19	5.2	8	7
2.0	1	2	5.4	5	6
2.2	4	3	5.8	3	4

Seventeen corrections are required in $I_5(x)$:

x	<i>for</i>	<i>read</i>	x	<i>for</i>	<i>read</i>
0.2	702	699	3.0	0	5
0.6	6	5	3.8	8	7
0.8	6	8	4.2	0	1
1.0	6	7	4.6	6	7
1.4	1	0	4.8	8	7
1.6	2	3	5.6	7	6
1.8	9	7	5.8	5	6
2.0	2	3	6.0	38	40
2.4	5	6			

Fourteen corrections are required in $I_6(x)$:

x	<i>for</i>	<i>read</i>	x	<i>for</i>	<i>read</i>
0.2	2	1	2.6	4	3
0.4	4	2	3.0	8	9
0.6	3	2	4.2	69	70
0.8	7	8	4.6	47	51
1.2	2	3	4.8	4	2
1.8	73	69	5.0	7	8
2.4	0	1	5.8	0	1

Nineteen corrections are required in $I_7(x)$:

x	<i>for</i>	<i>read</i>	x	<i>for</i>	<i>read</i>
0.2	9	8	3.8	7	6
0.4	4	3	4.0	2	1
0.6	7	5	4.2	5	6
1.8	1	0	4.6	4	5
2.2	3	2	4.8	90	89
2.4	7	9	5.2	60	59
2.6	6	5	5.6	30	29
3.0	2	5	5.8	2	3
3.2	9	8	6.0	1	2
3.4	2	1			

Eighteen corrections are required in $I_8(x)$:

x	<i>for</i>	<i>read</i>	x	<i>for</i>	<i>read</i>
0.2	7	6	3.6	8	9
0.6	2	1	3.8	8	6
0.8	6	7	4.2	7	8
1.0	3	6	4.6	5	8
2.2	5	4	4.8	9	7
2.6	3	2	5.0	6	7
2.8	400	398	5.2	1	0
3.0	55	60	5.8	5	6
3.4	1	0	6.0	3	4

Fifteen corrections are required in $I_9(x)$:

x	for	read	x	for	read
0.2	8	7	3.4	1	0
0.6	7	4	3.8	7	6
0.8	2	3	4.4	3	2
1.0	4	6	4.6	598	606
1.6	0	1	4.8	70	69
2.2	6	5	5.6	1	0
2.8	510	490	5.8	7	8
3.0	1	2			

Fifteen corrections are required in $I_{10}(x)$:

x	for	read	x	for	read
0.2	5	4	3.4	6	5
0.4	3	2	3.8	6	5
0.6	4	3	4.2	5	6
0.8	5	6	4.6	2	3
1.0	3	4	4.8	2	1
2.2	4	3	5.0	7	8
2.8	53	24	5.2	2	1
3.0	5	6			

Sixteen corrections are required in $I_{11}(x)$:

x	for	read	x	for	read
0.4	7	8	3.4	3	4
1.4	8	9	3.6	9	8
1.8	0	3	4.2	39	40
2.0	7	8	4.4	5	3
2.2	79	81	4.6	6	8
2.4	4	5	5.4	6	5
2.6	89	90	5.6	2	3
3.0	0	1	5.8	3	4

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1. D. J. Sookne, "Bessel functions of real argument and integer order," *J. Res. Nat. Bur. Standards Section B*, v. 77, 1973, pp. 125–132.

547. — W. LJUNGGREN, "Über die Lösung einiger unbestimmten Gleichungen vierten Grades," *Avh. Norske Vid.- Akad. Oslo. I. Mat. Natur. Klasse*, 1934, No. 14, Table on pp. 14–16.

This useful table is not listed by either Lehmer [1] or by Zimmer [2]. It gives one of the fundamental units for 65 out of the 82 pure quartic fields $Q(\sqrt[4]{D})$ in the range $1 < D < 100$. $D = 26, 42, \dots, 95, 97$ are missing, while $D = 8, 27, 54$ and 72 are included redundantly since these are the same fields as those for $D = 2, 3, 24$ and 18 , respectively. This unit

$$\epsilon = (a + b\eta + c\bar{\eta} + d\bar{\bar{\eta}})/e$$

and that of the subfield $Q(\sqrt{D})$ constitute a fundamental set for $Q(\sqrt[4]{D})$. Here, $D = fg^2h^3$, $\eta = \sqrt[4]{D}$, $\bar{\eta} = \eta^2/gh$ and $\bar{\bar{\eta}} = \eta^3/gh^2$.

The errors are:

(1) ϵ for $D = 76$ is entirely wrong; its product with its real conjugate equals 5, not 1. The correct unit is

$$\frac{1}{2}(5071 + 1717\eta + 1163\bar{\eta} + 394\bar{\bar{\eta}}).$$

(2) The unit for $D = 85$, namely,

$$\frac{1}{2}(83 + 27\eta + 9\bar{\eta} + 3\bar{\bar{\eta}}),$$

is erroneously listed for 87.

(3) The correct unit for 87 is

$$28 + 9\eta + 3\bar{\eta} + \bar{\bar{\eta}},$$

not that listed for either 87 or 85.

(4) For $D = 88$, $b = 205726$ not 200726.

(5) Further, although ϵ_3 for $D = 28$ and 56 are units, they do not conform with Ljunggren's definition of ϵ_3 . To agree with this, change the signs of η and $\bar{\eta}$ in these two cases.

Ljunggren is not specific as to how he computed most of these ϵ . He mentions (p. 12) "eine Art Kettenbruchentwicklung". The errors were detected by comparison with an unpublished table of the undersigned. The $Q(\sqrt[4]{D})$, both for positive and negative D , are among those number fields whose Dedekind zeta functions are expressible in terms of Epstein zeta functions [3]. Thereby the product of the regulator and class number can be easily computed to sufficient accuracy and ϵ may be deduced from this. For example, for three fields not in Ljunggren's Table, I find, with only an HP-67,

D	a	b	c	d	e
26	158137618755	70031246722	31013338610	13734257446	1
-22	91167	440140	267972	81146	1
-29	330206	411912	189709	39122	1

D. S.

1. D. H. LEHMER, *Guide to Tables in the Theory of Numbers*, National Academy of Sciences, Washington, D. C., 1941.

2. HORST ZIMMER, *Computational Problems, Methods, and Results in Algebraic Number Theory*, Lecture Notes in Math., No. 262, Springer, Berlin, 1972.

3. DANIEL SHANKS, "Dedekind zeta functions that have sums of Epstein zeta functions as factors," *Math. Comp.* (To appear.)