

Addendum and Corrigendum to “High-Precision Values of the Gamma Function and of Some Related Coefficients”

By Arne Fransen

Abstract. I present corrected values for the Tables IV and V together with an extension of the Tables I–V. I also present an 80D value of my constant F .

Unfortunately there were some errors at most in the 10 last decimal places in the values presented in Tables IV and V of our paper [2]. Owing to a very convincing memorandum [3], which was kindly sent to us from Dr. William A. Johnson, I made a recalculation of our presented values. The errors were then revealed.

At the same time I decided to extend the Tables I–V up to $k = 60$ for the Zeta values and thus up to $k = 61$ for the others. This made it possible to use Eqs. (3.3) and (3.5) also to calculate the values belonging to the sets I_2 and I_4 , respectively. The intervals for x will now be $0 < x < 0.3726$, $|x| < 0.3804$ and $-0.3665 < x < 0$. Using the coefficients a_k and d_k , we may thus compute the value of the Gamma function for any real x to 80D by means of Eqs. (3.3)–(3.5).

Using the coefficients a_k and the procedure in [1], I could also now produce a value to 80D of my constant

$$F = 2.80777\ 02420\ 28519\ 36522\ 15011\ 86557\ 77293\ 23080$$

$$85920\ 93019\ 82912\ 20054\ 80959\ 71008\ 89121\ 9016\bar{7}.$$

Other values in our paper were not affected by these corrections.

Acknowledgement. I want to thank Dr. William A. Johnson for calling our attention to the corrections needed.

TABLE I (continued)

Values of the Riemann Zeta function for integral values

Zeta(52) =	1.00000	00000	00000	22204	46050	79804	19839	99320	09420	46539	64236	65432	94389	34392	36654	04256
Zeta(53) =	1.00000	00000	00000	11102	23025	14106	61337	20544	56992	13827	02483	22290	04426	25934	09233	33089
Zeta(54) =	1.00000	00000	00000	05551	11512	48454	81243	72373	65905	09430	28167	23550	61652	68095	85368	07516
Zeta(55) =	1.00000	00000	00000	02775	55756	21361	24172	58163	24538	54069	76898	48903	74369	02721	87963	36488
Zeta(56) =	1.00000	00000	00000	01387	77878	09725	23276	28390	94906	50022	19077	18624	68615	88673	48024	93423
Zeta(57) =	1.00000	00000	00000	00693	88939	04544	15369	74460	85326	24980	92748	35874	17934	71311	33654	51618
Zeta(58) =	1.00000	00000	00000	00346	94469	52165	92262	47442	71496	10933	46219	50470	62700	58062	44000	34281
Zeta(59) =	1.00000	00000	00000	00173	47234	76047	57657	20489	72969	93759	59074	78054	47890	72966	32890	24671
Zeta(60) =	1.00000	00000	00000	00086	73617	38011	99337	28342	05506	73429	51487	90714	14574	06328	93710	87238

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TABLE II (continued)

Values of the coefficients in the expansion of the inverted Gamma function for s = 1

Table with 12 columns and 12 rows of numerical values for coefficients a(53) through a(61).

TABLE III (continued)

Values of the coefficients in the expansion of the Gamma function for s = 1

Table with 12 columns and 12 rows of numerical values for coefficients b(53) through b(61).

TABLE IV (corrected and continued)

Values of the coefficients in the expansion of the Gamma function for s = 3/2

Table with 12 columns and 38 rows of numerical values for coefficients c(20) through c(61).

TABLE V (corrected and continued)

Values of the coefficients in the expansion of the inverted Gamma function for $s = 3/2$

d(22) =	0.00000	00000	00169	46340	90432	05222	67740	94974	38014	13022	65545	63535	59019	78203	07906	97508
d(23) =	-0.00000	00000	00027	87575	67071	25752	08297	53147	96493	29340	82681	07805	36761	79478	59550	19175
d(24) =	0.00000	00000	00001	86703	94695	06530	54191	19188	40589	11440	53485	06186	66982	61684	91953	71878
d(25) =	0.00000	00000	00000	13049	49900	85879	86588	17799	98927	35780	40861	92882	68833	50321	38856	35941
d(26) =	-0.00000	00000	00000	04858	87414	41877	86529	61731	08402	98295	71065	90453	72022	35628	34674	10187
d(27) =	0.00000	00000	00000	00582	95426	92459	46783	18599	84244	21052	15780	29982	96525	21865	05927	44093
d(28) =	-0.00000	00000	00000	00025	92909	41799	37838	70477	84514	25919	18218	95695	57926	68398	65789	88535
d(29) =	-0.00000	00000	00000	00003	32675	40102	85788	59871	42882	20413	88729	54026	37008	80374	40064	46886
d(30) =	0.00000	00000	00000	00000	79449	61635	76810	53924	96881	65457	63873	70190	56982	80506	50196	09016
d(31) =	-0.00000	00000	00000	00000	07755	54328	84373	57293	90253	77073	16772	37834	35449	41906	17538	98088
d(32) =	0.00000	00000	00000	00000	00255	33736	29132	96957	91806	30480	15362	58531	88942	07410	97570	27149
d(33) =	0.00000	00000	00000	00000	00042	74520	16014	71733	79460	02920	72363	42310	60718	16496	48645	20114
d(34) =	-0.00000	00000	00000	00000	00008	26338	13746	68449	50568	79321	72514	28478	54547	49187	06390	20671
d(35) =	0.00000	00000	00000	00000	00000	71081	87657	25339	79736	55066	50482	39651	03124	66698	42696	67418
d(36) =	-0.00000	00000	00000	00000	00000	02074	94638	87704	29612	45013	10690	01248	14732	98561	32833	42525
d(37) =	-0.00000	00000	00000	00000	00000	00328	59544	06994	86048	30125	91386	18242	74687	86599	77267	37605
d(38) =	0.00000	00000	00000	00000	00000	00058	19433	90819	87478	73747	69479	02225	03415	36340	08311	84450
d(39) =	-0.00000	00000	00000	00000	00000	00004	70293	21304	49893	36039	90226	26453	86248	96238	86004	13380
d(40) =	0.00000	00000	00000	00000	00000	00000	14478	55651	58528	64715	71007	47334	14946	90509	51186	
d(41) =	0.00000	00000	00000	00000	00000	00000	01597	83150	54786	78867	34059	40543	53327	73835	18755	37660
d(42) =	-0.00000	00000	00000	00000	00000	00000	00287	82471	74761	34448	59106	01443	70749	76498	12804	21786
d(43) =	0.00000	00000	00000	00000	00000	00000	00023	00886	40061	20204	75117	23789	27644	25923	08001	95226
d(44) =	-0.00000	00000	00000	00000	00000	00000	00000	81524	69850	72319	69959	00845	41422	71516	81270	79106
d(45) =	-0.00000	00000	00000	00000	00000	00000	00000	04842	01452	13897	81552	19553	33904	52797	10209	36817
d(46) =	0.00000	00000	00000	00000	00000	00000	00000	01018	82590	41957	85489	64669	06836	98274	81276	99713
d(47) =	-0.00000	00000	00000	00000	00000	00000	00000	00084	12953	04954	03489	52788	55482	99738	59773	97365
d(48) =	0.00000	00000	00000	00000	00000	00000	00000	00003	48870	05836	57446	86098	51780	64378	25829	32007
d(49) =	0.00000	00000	00000	00000	00000	00000	00000	00000	07563	10899	94869	57784	54309	91541	16591	68917
d(50) =	-0.00000	00000	00000	00000	00000	00000	00000	00000	02589	53190	69537	33195	18160	84218	44005	41894
d(51) =	0.00000	00000	00000	00000	00000	00000	00000	00000	00230	70239	97849	78036	96572	53603	39490	56039
d(52) =	-0.00000	00000	00000	00000	00000	00000	00000	00000	00011	09196	43852	26435	46500	35654	70678	97866
d(53) =	0.00000	00000	00000	00000	00000	00000	00000	00000	00000	03979	09169	04853	02035	24506	25990	77982
d(54) =	0.00000	00000	00000	00000	00000	00000	00000	00000	00000	04638	75302	52893	13358	12877	76304	29389
d(55) =	-0.00000	00000	00000	00000	00000	00000	00000	00000	00000	00473	78773	55218	43976	95289	41319	92752
d(56) =	0.00000	00000	00000	00000	00000	00000	00000	00000	00000	00026	17289	95523	33790	71510	56558	24239
d(57) =	-0.00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	54156	54603	12930	09212	90677	99682
d(58) =	-0.00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	05442	20740	21090	62067	61171	57051
d(59) =	0.00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00722	43429	31678	49509	98126	66349
d(60) =	-0.00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00046	05280	92059	15371	82048	77391
d(61) =	0.00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00001	52436	24743	12988	09809	07069

National Defence Research Institute
 Division 1, Section 185
 S-104 50 Stockholm 80, Sweden

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