

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 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

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