

APPENDIX

G A Table of Bessel Functions

Bessel Functions of the First Kind, $J_n(x)$

x	J_0	J_1	J_2	J_3	J_4	J_5	J_6	J_7	J_8	J_9	J_{10}
0.0	1.00										
.2	.99	.10									
.4	.96	.20	.02								
.6	.91	.29	.04								
.8	.85	.37	.08	.01							
1.0	.77	.44	.11	.02							
.2	.67	.50	.16	.03	.01 ⁻						
.4	.57	.54	.21	.05	.01 ⁻						
.6	.46	.57	.26	.07	.01						
.8	.34	.58	.31	.10	.02						
2.0	.22	.58	.35	.13	.03	.01 ⁻					
.2	.11	.56	.40	.16	.05	.01					
.4	.00	.52	.43	.20	.06	.02					
.6	-.10	.47	.46	.24	.08	.02					
.8	-.19	.41	.48	.27	.11	.03	.01 ⁻				
3.0	-.26	.34	.49	.31	.13	.04	.01				
.2	-.32	.26	.48	.34	.16	.06	.02				
.4	-.36	.18	.47	.37	.19	.07	.02				
.6	-.39	.10	.44	.40	.22	.09	.03	.01 ⁻			
.8	-.40	.01	.41	.42	.25	.11	.04	.01 ⁻			
4.0	-.40	-.07	.36	.43	.28	.13	.05	.02			
.2	-.38	-.14	.31	.43	.31	.16	.06	.02			
.4	-.34	-.20	.25	.43	.34	.18	.08	.03	.01 ⁻		
.6	-.30	-.26	.18	.42	.36	.21	.09	.03	.01 ⁻		
.8	-.24	-.30	.12	.40	.38	.23	.11	.04	.01		
5.0	-.18	-.33	.05	.36	.39	.26	.13	.05	.02	.01 ⁻	
.2	-.11	-.34	-.02	.33	.40	.29	.15	.07	.02	.01 ⁻	
.4	-.04	-.35	-.09	.28	.40	.31	.18	.08	.03	.01 ⁻	
.6	.03	-.33	-.15	.23	.39	.33	.20	.09	.04	.01 ⁻	
.8	.09	-.31	-.20	.17	.38	.35	.22	.11	.05	.02	.01 ⁻

Bessel Functions of the First Kind, $J_n(x)$

x	J_0	J_1	J_2	J_3	J_4	J_5	J_6	J_7	J_8	J_9	J_{10}
6.0	.15	-.28	-.24	.11	.36	.36	.25	.13	.06	.02	.01
.2	.20	-.23	-.28	.05	.33	.37	.27	.15	.07	.03	.01
.4	.24	-.18	-.30	-.01	.29	.37	.29	.17	.08	.03	.01
.6	.27	-.12	-.31	-.06	.25	.37	.31	.19	.10	.04	.01
.8	.29	-.07	-.31	-.12	.21	.36	.33	.21	.11	.05	.02
7.0	.30	-.00	-.30	-.17	.16	.35	.34	.23	.13	.06	.02
.2	.30	.05	-.28	-.21	.11	.33	.35	.25	.15	.07	.03
.4	.28	.11	-.25	-.24	.05	.30	.35	.27	.16	.08	.04
.6	.25	.16	-.21	-.27	-.00	.27	.35	.29	.18	.10	.04
.8	.22	.20	-.16	-.29	-.06	.23	.35	.31	.20	.11	.05
8.0	.17	.23	-.11	-.29	-.11	.19	.34	.32	.22	.13	.06
.2	.12	.26	-.06	-.29	-.15	.14	.32	.33	.24	.14	.07
.4	.07	.27	-.00	-.27	-.19	.09	.30	.34	.26	.16	.08
.6	.01	.27	.05	-.25	-.22	.04	.27	.34	.28	.18	.10
.8	-.04	.26	.10	-.22	-.25	-.01	.24	.34	.29	.20	.11
9.0	-.09	.25	.14	-.18	-.27	-.06	.20	.33	.31	.21	.12
.2	-.14	.22	.18	-.14	-.27	-.10	.16	.31	.31	.23	.14
.4	-.18	.18	.22	-.09	-.27	-.14	.12	.30	.32	.25	.16
.6	-.21	.14	.24	-.04	-.26	-.18	.08	.27	.32	.27	.17
.8	-.23	.09	.25	.01	-.25	-.21	.03	.25	.32	.28	.19
10.0	-.25	.04	.25	.06	-.22	-.23	-.01	.22	.32	.29	.21

Approximations for small arguments:

$$J_0(x) \approx 1 - \frac{x^2}{4}$$

$$J_1(x) \approx \frac{x}{2} \left(1 - \frac{x^2}{8} \right)$$

$$J_2(x) \approx \frac{x^2}{8} \left(1 - \frac{x^2}{12} \right)$$