

Blog Entry © Monday August 4, 2025, by James Pate Williams, Jr. Bessel Functions of the First and Second Kind, Their Derivatives and Zeros

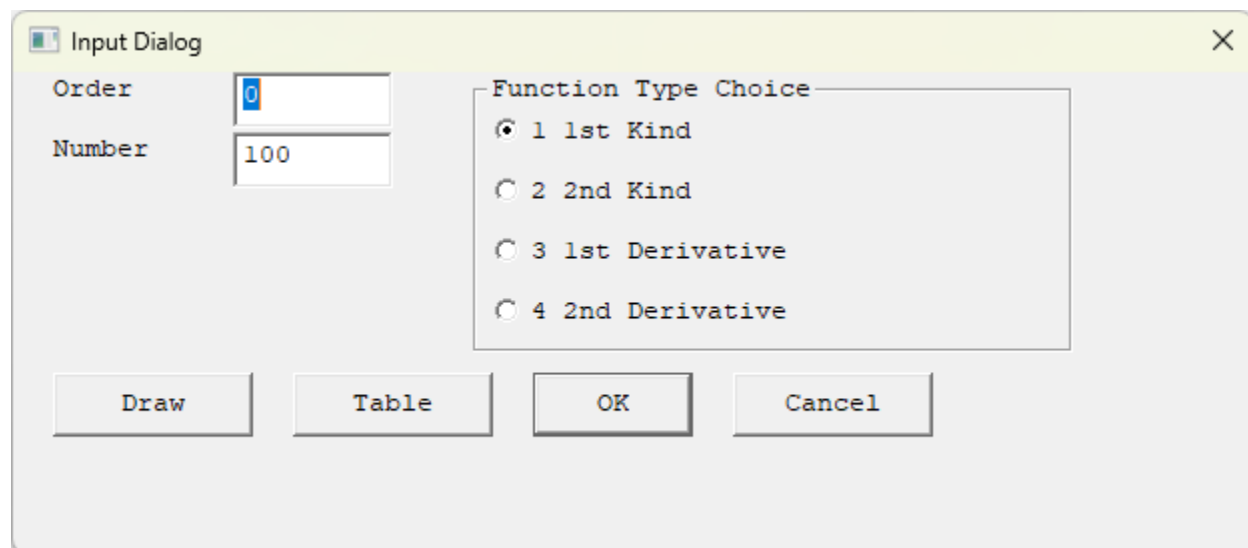


Figure 1 Opening Input Dialog

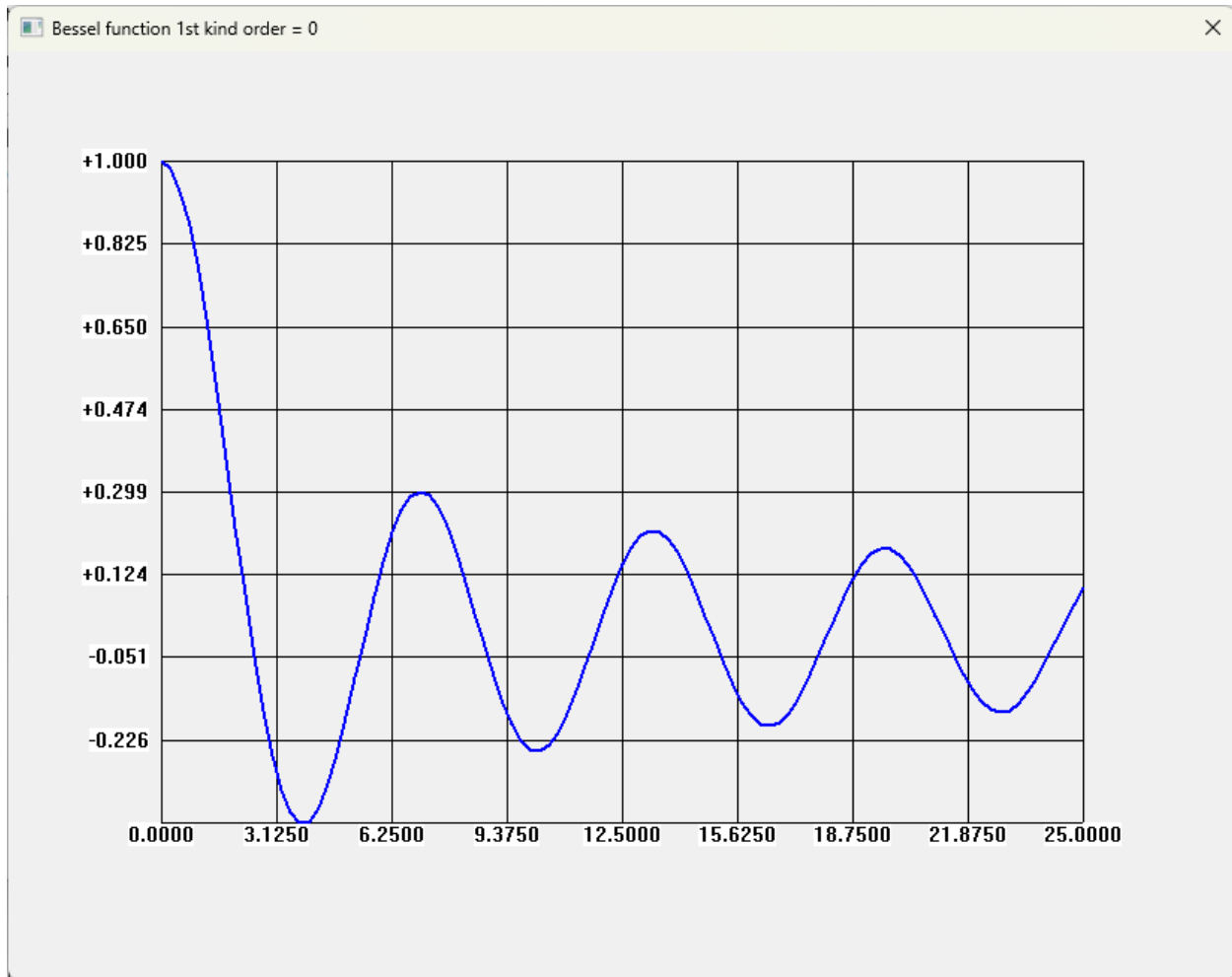


Figure 2 Bessel Function of the First Kind Order = 0

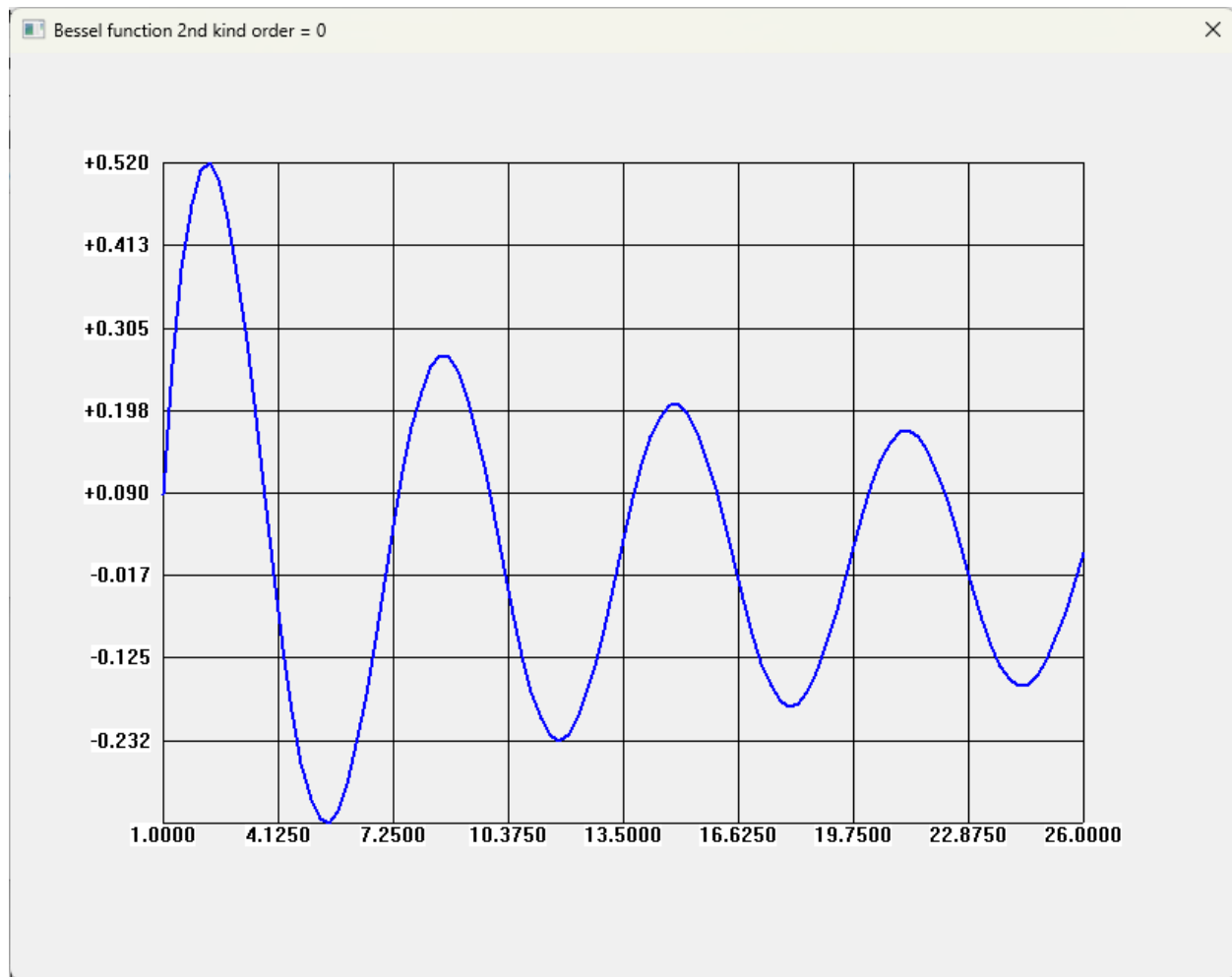


Figure 3 Bessel Functions of the Second Kind Order = 0

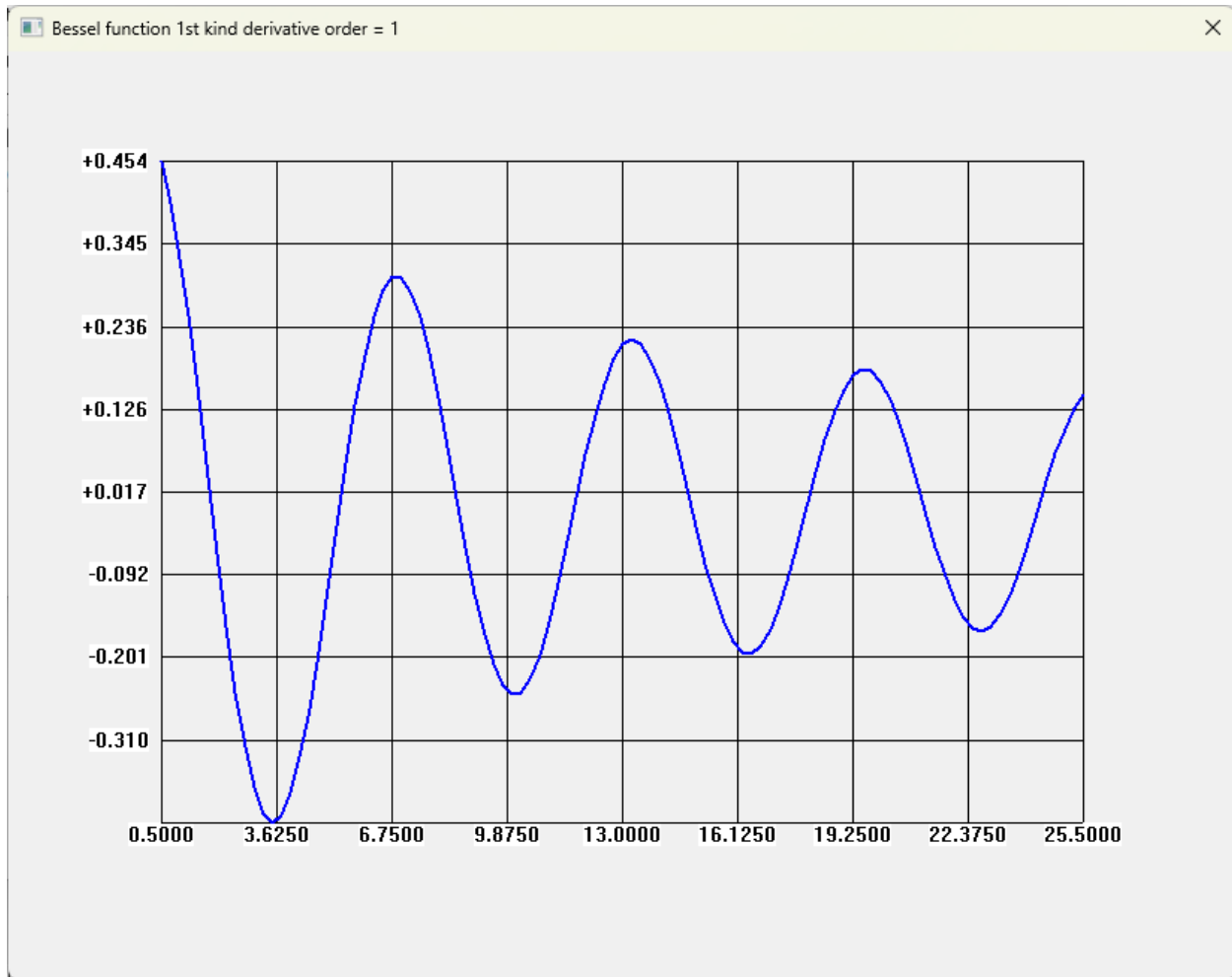


Figure 4 Bessel Function of the First Kind Derivative Order = 1

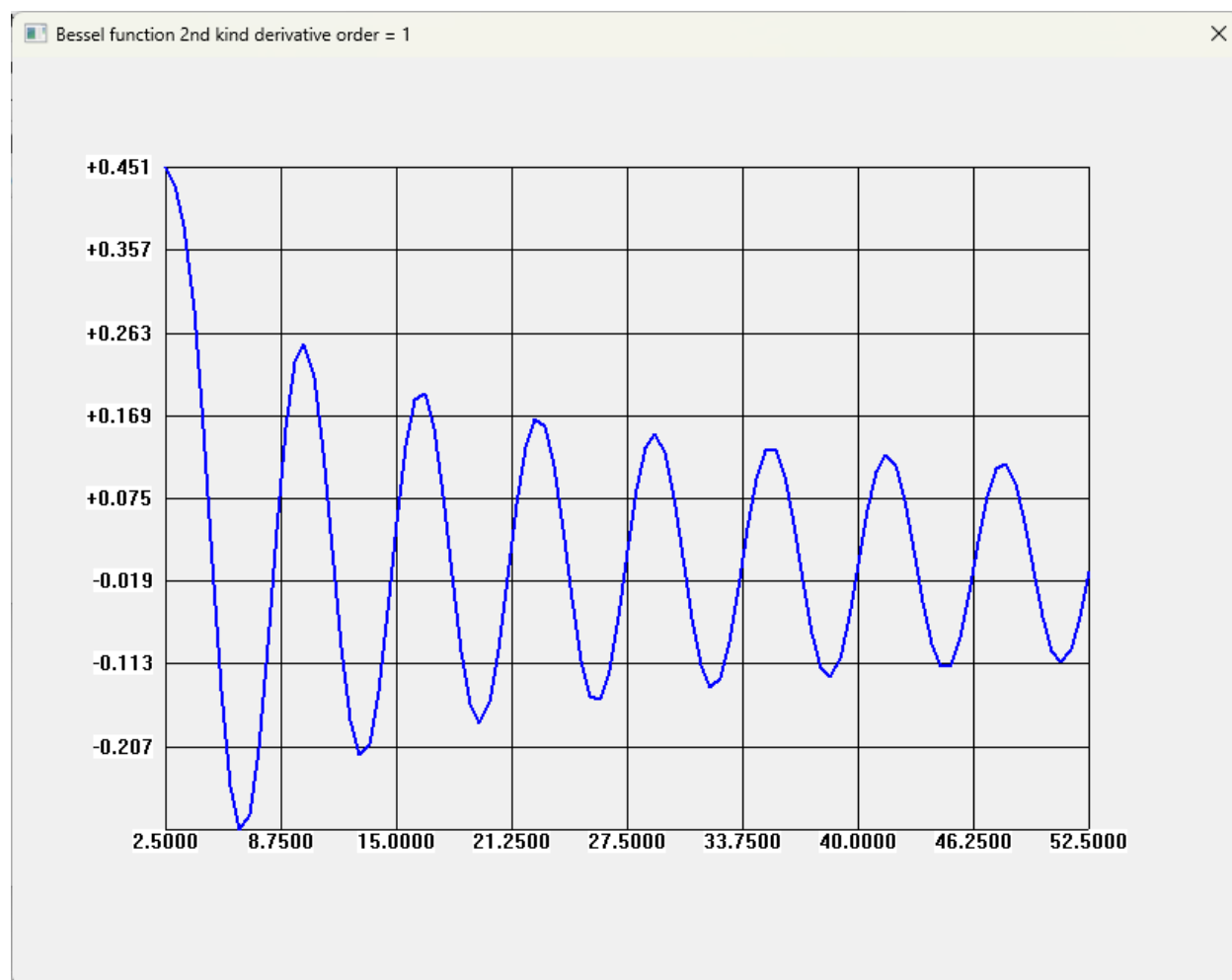


Figure 5 Bessel Function of the Second Kind Order = 1

#	Zeros
0	0.0000000000
1	2.4048255577
2	5.5200781103
3	8.6537279129
4	11.7915344390
5	14.9309177085
6	18.0710639679
7	21.2116366299
8	24.3524715307
9	27.4934791320
10	30.6346064684
11	33.7758202136
12	36.9170983537
13	40.0584257646
14	43.1997917132
15	46.3411883717
16	49.4826098974
17	52.6240518411
18	55.7655107550
19	58.9069839261
20	62.0484691902
21	65.1899648002
22	68.3314693299
23	71.4729816036
24	74.6145006437

Table 1 Zeros of the Bessel Function of the Second Kind Order = 0

#	Zeros
0	0.0000000000
1	0.8935769663
2	3.9576784193
3	7.0860510603
4	10.2223450435
5	13.3610974739
6	16.5009224415
7	19.6413097009
8	22.7820280473
9	25.9229576532
10	29.0640302527
11	32.2052041165
12	35.3464523052
13	38.4877566531
14	41.6291044662
15	44.7704866072
16	47.9118963315
17	51.0533285524
18	54.1947793611
19	57.3362457048
20	60.4777251642
21	63.6192157977
22	66.7607160287
23	69.9022245639
24	73.0437403324

Table 2 Zeros of the Bessel Function of the Second Kind Order = 0

#	Zeros
0	0.0000000000
1	1.8411837813
2	5.3314427735
3	8.5363163663
4	11.7060049026
5	14.8635886339
6	18.0155278627
7	21.1643698592
8	24.3113268572
9	27.4570505711
10	30.6019229727
11	33.7461828987
12	36.8899874092
13	40.0334440534
14	43.1766289654
15	46.3195975612
16	49.4623911397
17	52.6050411116
18	55.7475717923
19	58.8900022992
20	62.0323478707
21	65.1746208025
22	68.3168311260
23	71.4589871059
24	74.6010956135

Table 3 Zeros of the Derivative of the Bessel Function of the First Kind Order = 1

#	Zeros
0	0.0000000000
1	3.6830228566
2	6.9414999537
3	10.1234046554
4	13.2857581568
5	16.4400580073
6	19.5902417566
7	22.7380347174
8	25.8843146188
9	29.0295758194
10	32.1741182334
11	35.3181344582
12	38.4617538710
13	41.6050666189
14	44.7481374491
15	47.8910140708
16	51.0337324161
17	54.1763200643
18	57.3187985366
19	60.4611848734
20	63.6034927431
21	66.7457332372
22	69.8879154504
23	73.0300469105
24	76.1721339021

Table 4 Zeros of the Derivative of the Bessel Function of the Second Kind Order = 1