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>> clear
>> main
Function f(x) = x+ exp(-1*x^2)*cos(x), x0 = 0. Here is the iteration table:
          newton_x    error_newton    secant_x    error_secant
          ________    ____________    ________    ____________

    1           -1               1           1               0
    2     -0.53064         0.46936     -1.8342          2.8342
    3     -0.58863        0.057983     -0.11689          1.7173
    4      -0.5884      0.00022476     -0.66445         0.54756
    5      -0.5884      3.0704e-10     -0.57961        0.084836
    6      -0.5884               0     -0.58842       0.0088049
    7      -0.5884               0      -0.5884      1.8088e-05
    8      -0.5884               0      -0.5884      1.7167e-09
    9      -0.5884               0      -0.5884      1.1102e-16
    10     -0.5884               0      -0.5884      1.1102e-16

Function f(x) = x+ exp(-5*x^2)*cos(x), x0 = 0. Here is the iteration table:
          newton_x    error_newton     secant_x     error_secant
          ________    ____________    __________    ____________

    1           -1               1             1               0
    2     -0.04387         0.95613       -1.9964          2.9964
    3     -0.68386         0.63999    -0.0024226           1.994
    4     -0.29652         0.38735      -0.66679         0.66437
    5     -0.40253         0.10601      -0.42208         0.24471
    6     -0.40491       0.0023808       -0.4002        0.021876
    7     -0.40491      3.5779e-06      -0.40496       0.0047662
    8     -0.40491      8.1682e-12      -0.40491        5.327e-05
    9     -0.40491               0      -0.40491      1.5852e-07
    10    -0.40491               0      -0.40491      5.4049e-12

Function f(x) = x+ exp(-10*x^2)*cos(x), x0 = 0. Here is the iteration table:
           newton_x      error_newton     secant_x      error_secant
          ___________    ____________    ___________    ____________

    1              -1               1                1               0
    2     -0.00055303         0.99945               -2               3
    3        -0.98852         0.98797      -1.6353e-05               2
    4     -0.00069102         0.98783         -0.66667         0.66665
    5         -0.9857         0.98501         -0.40223         0.26444
    6     -0.00072956         0.98497         -0.26947         0.13276
    7        -0.98492         0.98419          -0.3322        0.062731
    8     -0.00074063         0.98418         -0.32677       0.0054302
    9        -0.98469         0.98395          -0.3264      0.00037227
    10    -0.00074383         0.98395          -0.3264      2.8569e-06

Function f(x) = x+ exp(-25*x^2)*cos(x), x0 = 0. Here is the iteration table:
           newton_x      error_newton     secant_x      error_secant
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1	-1	1	1	0
2	-3.9437e-10	1	-2	3
3	-1	1	-5.0025e-12	2
4	-3.9437e-10	1	-0.66667	0.66667
5	-1	1	-0.4	0.26666
6	-3.9437e-10	1	-0.039649	0.36035
7	-1	1	-0.29414	0.25449
8	-3.9437e-10	1	-0.25175	0.042393
9	-1	1	-0.23454	0.017205
10	-3.9437e-10	1	-0.23756	0.0030192

Function f(x) = x+ exp(-50*x^2)*cos(x), x0 = 0. Here is the iteration table:

	newton_x	error_newton	secant_x	error_secant
1	-1	1	1	0
2	0	1	-2	3
3	-1	1	0	2
4	0	1	-0.66667	0.66667
5	-1	1	-0.4	0.26667
6	0	1	-0.00077156	0.39923
7	-1	1	-0.28593	0.28516
8	0	1	-0.2253	0.060634
9	-1	1	-0.15135	0.07395
10	0	1	-0.19009	0.03874

	newton_x	error_newton	secant_x	error_secant
x+ exp(-1*x^2)*cos(x)	-0.5884	0	-0.5884	1.1102e-16
x+ exp(-5*x^2)*cos(x)	-0.40491	0	-0.40491	5.4049e-12
x+ exp(-10*x^2)*cos(x)	-0.00074383	0.98395	-0.3264	2.8569e-06
x+ exp(-25*x^2)*cos(x)	-3.9437e-10	1	-0.23756	0.0030192
x+ exp(-50*x^2)*cos(x)	0	1	-0.19009	0.03874

Function f(x) = x+ exp(-1*x^2)*cos(x), Here is the result table after 10 time ↙
iterations based on different initial guess:

x_0	newton_x	error_newton	secant_x	error_secant
-1	-0.5884	0	-0.5884	1.1102e-16
-0.5	-0.5884	0	-0.5884	0
-0.2	-0.5884	0	-0.5884	1.1102e-16
-0.1	-0.5884	0	-0.5884	0
0	-0.5884	0	-0.5884	0
0.1	-0.5884	0	-0.5884	1.1102e-16
0.2	-0.5884	0	-0.5884	0

0.5	-0.5884	0	-0.5884	0
1	-0.5884	0	-0.5884	0

Function f(x) = x+ exp(-5*x^2)*cos(x), Here is the result table after 10 time ↙
iterations based on different initial guess:

x_0	newton_x	error_newton	secant_x	error_secant
-1	-0.40491	0	-0.40491	7.2768e-05
-0.5	-0.40491	0	-0.40491	9.9247e-09
-0.2	-0.40491	0	-0.40491	5.5511e-17
-0.1	-0.40491	0	-0.40491	0
0	-0.40491	0	-0.40491	0
0.1	-0.40491	8.1682e-12	-0.40491	5.5511e-17
0.2	-0.40491	8.2377e-12	-0.40491	5.5511e-17
0.5	-0.40491	8.1682e-12	-0.40491	0
1	-0.40491	0	-0.40491	0

Function f(x) = x+ exp(-10*x^2)*cos(x), Here is the result table after 10 time ↙
iterations based on different initial guess:

x_0	newton_x	error_newton	secant_x	error_secant
-1	-0.98463	0.98388	-0.3264	3.435e-07
-0.5	-0.3264	0	-0.33124	0.062189
-0.2	-0.3264	0	-0.3264	2.852e-12
-0.1	-0.3264	0	-0.3264	1.5352e-12
0	-0.00074383	0.98395	-0.3264	3.9707e-13
0.1	-0.00074065	0.98417	-0.3264	8.5776e-13
0.2	-0.3264	0	-0.3264	3.7872e-12
0.5	-0.00074063	0.98418	-0.3264	0
1	-0.98463	0.98388	-0.3264	0

Function f(x) = x+ exp(-25*x^2)*cos(x), Here is the result table after 10 time ↙
iterations based on different initial guess:

x_0	newton_x	error_newton	secant_x	error_secant
-1	-1	1	-0.23744	1.1531e-10
-0.5	-0.23744	9.3758e-14	-0.22847	0.033122
-0.2	-0.23744	0	-0.23744	6.4543e-08
-0.1	-0.23744	0	-0.23746	0.00094924
0	-3.9437e-10	1	-0.23749	0.0016583
0.1	-0.23744	0	-0.23747	0.0012146
0.2	-0.23744	0	-0.23744	7.9177e-05
0.5	-0.23744	0	-0.23744	9.106e-11
1	-1	1	-0.23744	5.47e-05

Function f(x) = x+ exp(-50*x^2)*cos(x), Here is the result table after 10 time ↙

iterations based on different initial guess:

x_0	newton_x	error_newton	secant_x	error_secant
-1	-1	1	-0.25201	0.24103
-0.5	-1	1	-0.32106	0.32103
-0.2	-0.18329	0	-0.27286	0.10209
-0.1	-0.18329	0	-0.18551	0.017028
0	0	1	-0.19011	0.038852
0.1	-1	1	-0.18653	0.022414
0.2	0	1	-0.1833	0.0002988
0.5	-1	1	-0.18331	0.00062937
1	-1	1	-0.18492	0.013585

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