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This program computes x such that $f(x) = 0$,

where $f(x)$ is an N -th order polynomial equation

with coefficients

$A[i]$ for $(i = 0 \text{ to } N)$;

Guess $x[k]$ for $k = 0$ and then

the program computes recursively

$x[k+1] = x[k] - h \cdot f(x[k])$

until you stop the program by typing-in "s"

or you type "g" for the next guess for $x[0]$;

Type "s" to stop program.

Type "g" to start the next guess.

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N=2
 $A[0] = -2.000000$
 $B[0] = 0.000000$
 $A[1] = 0.000000$
 $B[1] = 0.000000$
 $A[2] = 1.000000$
 $B[2] = 0.000000$
 $h = 0.200000$
 $x[0] = 1.500000$
 $y[0] = 0.000000$

k	$x[k]$	$y[k]$	$fx[k]$	$fy[k]$	$gx[k]$	$gy[k]$
0	1.500000	0.000000	0.250000	0.000000	1.450000	0.000000
1	1.450000	0.000000	0.102500	0.000000	1.429500	0.000000
2	1.429500	0.000000	0.043470	0.000000	1.420806	0.000000
3	1.420806	0.000000	0.018690	0.000000	1.417068	0.000000
4	1.417068	0.000000	0.008082	0.000000	1.415452	0.000000
5	1.415452	0.000000	0.003503	0.000000	1.414751	0.000000
6	1.414751	0.000000	0.001520	0.000000	1.414447	0.000000
7	1.414447	0.000000	0.000660	0.000000	1.414315	0.000000
8	1.414315	0.000000	0.000287	0.000000	1.414258	0.000000
9	1.414258	0.000000	0.000124	0.000000	1.414233	0.000000
10	1.414233	0.000000	0.000054	0.000000	1.414222	0.000000
11	1.414222	0.000000	0.000023	0.000000	1.414217	0.000000
12	1.414217	0.000000	0.000010	0.000000	1.414215	0.000000
13	1.414215	0.000000	0.000004	0.000000	1.414214	0.000000

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14	1.414214	0.000000	0.000002	0.000000	1.414214	0.000000
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***** Next Guess *****

h = 0.200000

x[0] = 5.000000 y[0] = 0.000000

k	x[k]	y[k]	fx[k]	fy[k]	gx[k]	gy[k]
0	5.000000	0.000000	23.000000	0.000000	0.400000	0.000000
1	0.400000	0.000000	-1.840000	0.000000	0.768000	0.000000
2	0.768000	0.000000	-1.410176	0.000000	1.050035	0.000000
3	1.050035	0.000000	-0.897426	0.000000	1.229520	0.000000
4	1.229520	0.000000	-0.488280	0.000000	1.327176	0.000000
5	1.327176	0.000000	-0.238603	0.000000	1.374897	0.000000
6	1.374897	0.000000	-0.109658	0.000000	1.396829	0.000000
7	1.396829	0.000000	-0.048870	0.000000	1.406603	0.000000
8	1.406603	0.000000	-0.021469	0.000000	1.410896	0.000000
9	1.410896	0.000000	-0.009371	0.000000	1.412771	0.000000
10	1.412771	0.000000	-0.004079	0.000000	1.413586	0.000000
11	1.413586	0.000000	-0.001773	0.000000	1.413941	0.000000
12	1.413941	0.000000	-0.000770	0.000000	1.414095	0.000000
13	1.414095	0.000000	-0.000335	0.000000	1.414162	0.000000
14	1.414162	0.000000	-0.000145	0.000000	1.414191	0.000000
15	1.414191	0.000000	-0.000063	0.000000	1.414204	0.000000
16	1.414204	0.000000	-0.000027	0.000000	1.414209	0.000000
17	1.414209	0.000000	-0.000012	0.000000	1.414212	0.000000
18	1.414212	0.000000	-0.000005	0.000000	1.414213	0.000000
19	1.414213	0.000000	-0.000002	0.000000	1.414213	0.000000
20	1.414213	0.000000	-0.000001	0.000000	1.414213	0.000000
21	1.414213	0.000000	-0.000000	0.000000	1.414213	0.000000
22	1.414213	0.000000	-0.000000	0.000000	1.414214	0.000000
23	1.414214	0.000000	-0.000000	0.000000	1.414214	0.000000

***** Next Guess *****

h = -0.200000

x[0] = -4.000000 y[0] = 0.000000

k	x[k]	y[k]	fx[k]	fy[k]	gx[k]	gy[k]
0	-4.000000	0.000000	14.000000	0.000000	-1.200000	0.000000
1	-1.200000	0.000000	-0.560000	0.000000	-1.312000	0.000000
2	-1.312000	0.000000	-0.278656	0.000000	-1.367731	0.000000
3	-1.367731	0.000000	-0.129311	0.000000	-1.393593	0.000000
4	-1.393593	0.000000	-0.057897	0.000000	-1.405173	0.000000
5	-1.405173	0.000000	-0.025489	0.000000	-1.410271	0.000000
6	-1.410271	0.000000	-0.011136	0.000000	-1.412498	0.000000
7	-1.412498	0.000000	-0.004849	0.000000	-1.413468	0.000000
8	-1.413468	0.000000	-0.002109	0.000000	-1.413890	0.000000

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9	-1.413890	0.000000	-0.000916	0.000000	-1.414073	0.000000
10	-1.414073	0.000000	-0.000398	0.000000	-1.414152	0.000000
11	-1.414152	0.000000	-0.000173	0.000000	-1.414187	0.000000
12	-1.414187	0.000000	-0.000075	0.000000	-1.414202	0.000000
13	-1.414202	0.000000	-0.000033	0.000000	-1.414209	0.000000
14	-1.414209	0.000000	-0.000014	0.000000	-1.414211	0.000000
15	-1.414211	0.000000	-0.000006	0.000000	-1.414213	0.000000
16	-1.414213	0.000000	-0.000003	0.000000	-1.414213	0.000000
17	-1.414213	0.000000	-0.000001	0.000000	-1.414213	0.000000
18	-1.414213	0.000000	-0.000001	0.000000	-1.414213	0.000000
19	-1.414213	0.000000	-0.000000	0.000000	-1.414214	0.000000
20	-1.414214	0.000000	-0.000000	0.000000	-1.414214	0.000000
21	-1.414214	0.000000	-0.000000	0.000000	-1.414214	0.000000