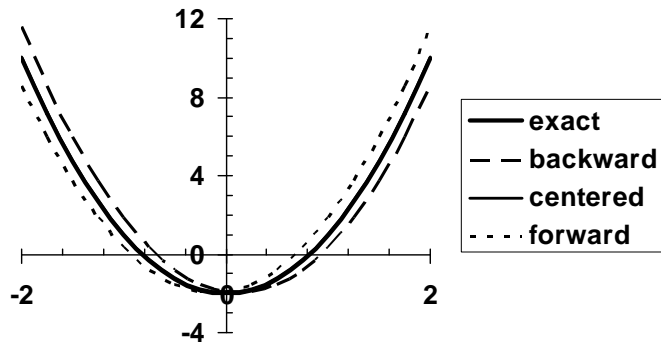


Solution 4.20

Here are Excel worksheets and charts that have been set up to solve this problem:

	A	B	C	D	E	F	G	H
1	dx	0.25						
2								
3	First	f(x)	f(x-dx)	f(x+dx)	f(x)-exact	f(x)-back	f(x)-cent	f(x)-forw
4	-2	0	-2.89063	2.140625	10	11.5625	10.0625	8.5625
5	-1.75	2.140625	0	3.625	7.1875	8.5625	7.25	5.9375
6	-1.5	3.625	2.140625	4.546875	4.75	5.9375	4.8125	3.6875
7	-1.25	4.546875	3.625	5	2.6875	3.6875	2.75	1.8125
8	-1	5	4.546875	5.078125	1	1.8125	1.0625	0.3125
9	-0.75	5.078125	5	4.875	-0.3125	0.3125	-0.25	-0.8125
10	-0.5	4.875	5.078125	4.484375	-1.25	-0.8125	-1.1875	-1.5625
11	-0.25	4.484375	4.875	4	-1.8125	-1.5625	-1.75	-1.9375
12	0	4	4.484375	3.515625	-2	-1.9375	-1.9375	-1.9375
13	0.25	3.515625	4	3.125	-1.8125	-1.9375	-1.75	-1.5625
14	0.5	3.125	3.515625	2.921875	-1.25	-1.5625	-1.1875	-0.8125
15	0.75	2.921875	3.125	3	-0.3125	-0.8125	-0.25	0.3125
16	1	3	2.921875	3.453125	1	0.3125	1.0625	1.8125
17	1.25	3.453125	3	4.375	2.6875	1.8125	2.75	3.6875
18	1.5	4.375	3.453125	5.859375	4.75	3.6875	4.8125	5.9375
19	1.75	5.859375	4.375	8	7.1875	5.9375	7.25	8.5625
20	2	8	5.859375	10.89063	10	8.5625	10.0625	11.5625



Solution continued on the next page...

	A	B	C	D	E	F	G	H	I	J
1	dx	0.25								
2										
3	x	f(x)	f(x-dx)	f(x+dx)	f(x-2dx)	f(x+2dx)	f'(x)-exact	f'(x)-back	f'(x)-cent	f'(x)-forw
4	-2	0	-2.89063	2.140625	-6.625	3.625	-12	-13.5	-12	-10.5
5	-1.75	2.140625	0	3.625	-2.89063	4.546875	-10.5	-12	-10.5	-9
6	-1.5	3.625	2.140625	4.546875	0	5	-9	-10.5	-9	-7.5
7	-1.25	4.546875	3.625	5	2.140625	5.078125	-7.5	-9	-7.5	-6
8	-1	5	4.546875	5.078125	3.625	4.875	-6	-7.5	-6	-4.5
9	-0.75	5.078125	5	4.875	4.546875	4.484375	-4.5	-6	-4.5	-3
10	-0.5	4.875	5.078125	4.484375	5	4	-3	-4.5	-3	-1.5
11	-0.25	4.484375	4.875	4	5.078125	3.515625	-1.5	-3	-1.5	0
12	0	4	4.484375	3.515625	4.875	3.125	0	-1.5	0	1.5
13	0.25	3.515625	4	3.125	4.484375	2.921875	1.5	0	1.5	3
14	0.5	3.125	3.515625	2.921875	4	3	3	1.5	3	4.5
15	0.75	2.921875	3.125	3	3.515625	3.453125	4.5	3	4.5	6
16	1	3	2.921875	3.453125	3.125	4.375	6	4.5	6	7.5
17	1.25	3.453125	3	4.375	2.921875	5.859375	7.5	6	7.5	9
18	1.5	4.375	3.453125	5.859375	3	8	9	7.5	9	10.5
19	1.75	5.859375	4.375	8	3.453125	10.89063	10.5	9	10.5	12
20	2	8	5.859375	10.89063	4.375	14.625	12	10.5	12	13.5

