Answers to Odd Problems

Chapter 5

Section 5.1

1) $x = \pm 4$

3) $b = \pm 7i$

5) $m = \pm 7\sqrt{2}$

7) $x = \pm 5i\sqrt{3}$

9) x = 8, -2

11) x = 6, -1

13) $x = 4 \pm 5\sqrt{6}$

15) $x = \frac{6 \pm 5i\sqrt{3}}{2}$

17) $x = \frac{20}{3}, -\frac{22}{3}$

19) $x = \frac{-2 \pm 3\sqrt{21}}{3}$

21) C= 9

$(x+3)^2$

23) C = 25

$(y+5)^2$

25) C=4

$(b-2)^2$

27) C=49

$(x-7)^2$

29) $C = 9$

$(x+3)^2$

31) $C = \frac{9}{4}$

$\left(x + \frac{3}{2}\right)^2$

33) $C = \frac{49}{4}$

$\left(x - \frac{7}{2}\right)^2$

35) $C = \frac{121}{4}$

$\left(a - \frac{11}{2}\right)^2$

37) $C = \frac{1}{16}$

$\left(b + \frac{1}{4}\right)^2$

39) x = -7,1

41) a= -12, 2

43) a= -5, 15

45) x = 7,1

47) $x = -1 \pm \sqrt{7}$

49) $a = 6 \pm 3\sqrt{6}$

51) $x = -3 \pm \sqrt{14}$

53) $b = -3 \pm 2\sqrt{5}$

55) $x = -4 \pm 2i$

57) $x = \frac{-3 \pm i\sqrt{11}}{2}$

59) $x = \frac{-3 \pm \sqrt{19}}{2}$

61) $x = \frac{3}{4}$,-1

Section 5.2

1a) x =-6,2

1b) x = -6, 2

1c) x = -6,2

3a) $y = -5 \pm \sqrt{30}$

3b) $y = -5 \pm \sqrt{30}$

5) y = -8,2

7) x = -3

9) $y = 1 \pm i\sqrt{5}$

11) $w = 1, -\frac{5}{2}$

13) $z = \frac{2 \pm i\sqrt{5}}{3}$

15) $y = \frac{2 \pm \sqrt{2}}{3}$

17) y = -6,1

19) $t = \frac{-5 \pm \sqrt{89}}{4}$

21) $x = \frac{-5 \pm \sqrt{37}}{2}$

23) $y = \frac{-3 \pm \sqrt{41}}{8}$

25) x=5, -3

27) x = -4, 5

29) $x = \frac{1 \pm \sqrt{13}}{3}$

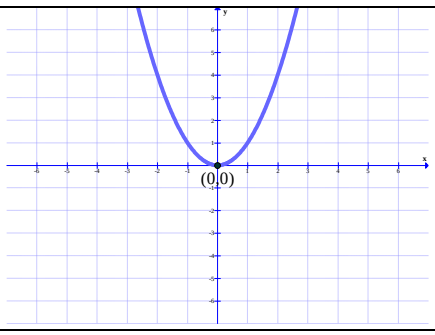
31) $y = \frac{1 \pm \sqrt{17}}{2}$

Section 5.3

1) $f(x) = x^2$

x	f(x)
2	4
1	1
0	0
-1	1
-2	4

Vertex (0,0)



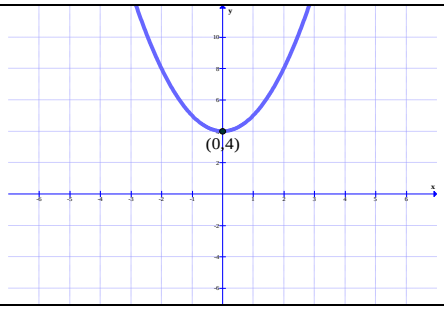
Answers to Odd Problems

Section 5.3

3) $k(x) = x^2 + 4$

x	k(x)
2	8
1	5
0	4
-1	5
-2	8

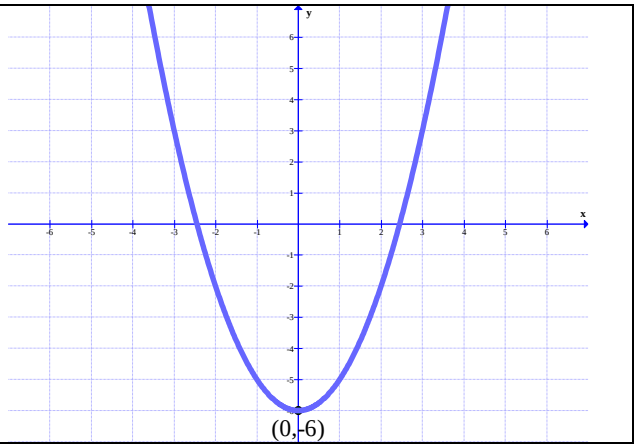
Vertex (0,4)



5) $n(x) = x^2 - 6$

x	n(x)
2	-2
1	-5
0	-6
-1	-5
-2	-2

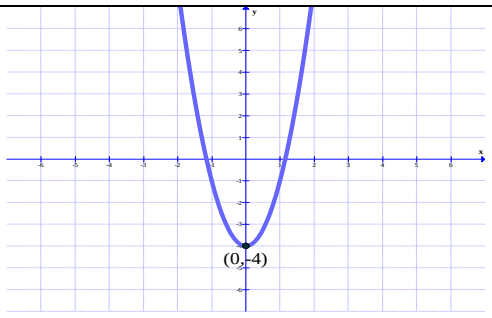
Vertex (0,-6)



7) $f(x) = 3x^2 - 4$

x	f(x)
2	8
1	-1
0	-4
-1	-1
-2	8

Vertex (0,-4)



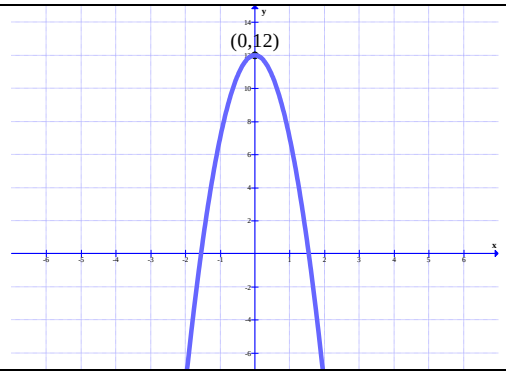
Answers to Odd Problems

Section 5.3

9) $b(x) = -5x^2 + 12$

x	b(x)
-2	-8
-1	7
0	12
1	7
2	-8

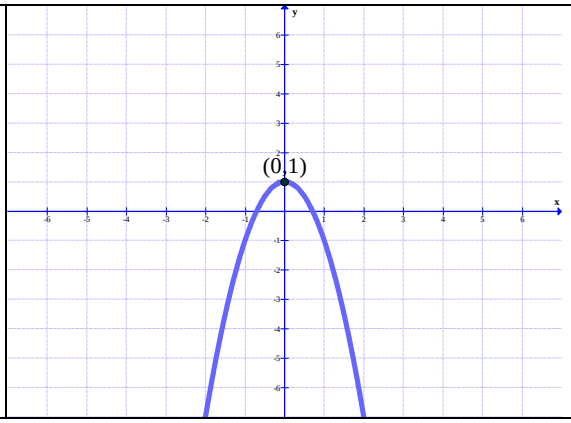
Vertex (0, 12)



11) $m(x) = -2x^2 + 1$

x	m(x)
2	-7
1	-1
0	1
-1	-1
-2	-7

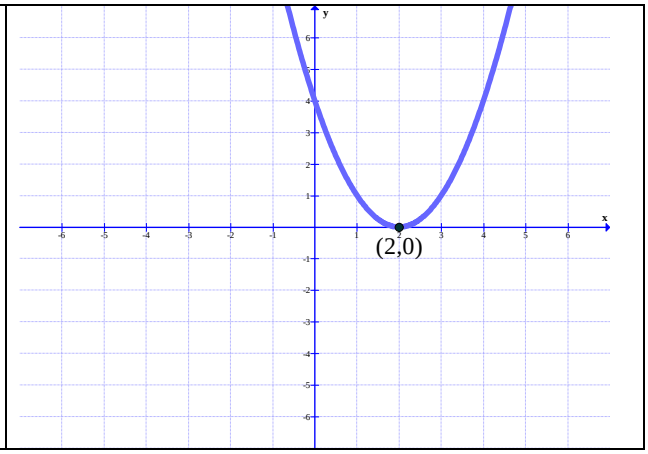
Vertex (0,1)



13) $f(x) = (x - 2)^2$

x	f(x)
4	4
3	1
2	0
1	1
0	4

Vertex (2,0)
Axis of symmetry x = 2



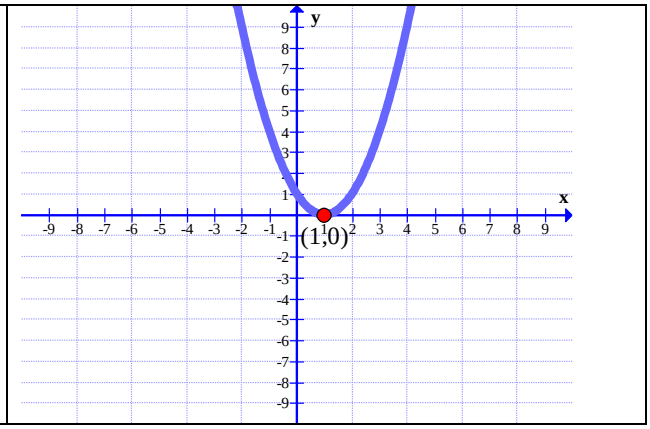
Answers to Odd Problems

Section 5.3

15) $m(x) = (x-1)^2$

x	m(x)
3	4
2	1
1	0
0	1
-1	4

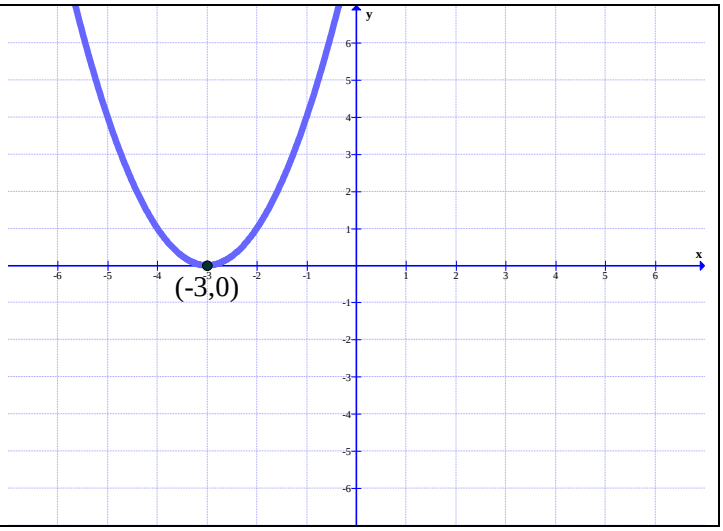
Vertex (1,0)
Axis of symmetry x=1



17) $n(x) = (x+3)^2$

x	n(x)
-1	4
-2	1
-3	0
-4	1
-5	4

Vertex (-3,0)
Axis of symmetry x = -3



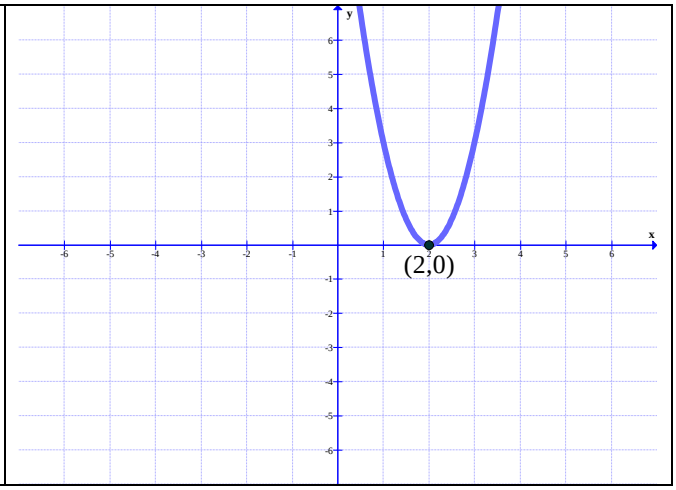
Answers to Odd Problems

Section 5.3

19) $f(x) = 3(x-2)^2$

x	f(x)
4	12
3	3
2	0
1	3
0	12

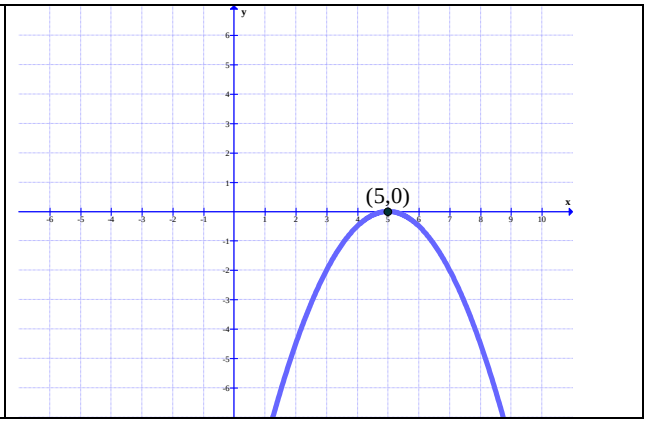
Vertex (2,0)
Axis of symmetry x = 2



21) $b(x) = \frac{-1}{2}(x-5)^2$

x	b(x)
7	-2
6	-1/2
5	0
4	-1/2
3	-2

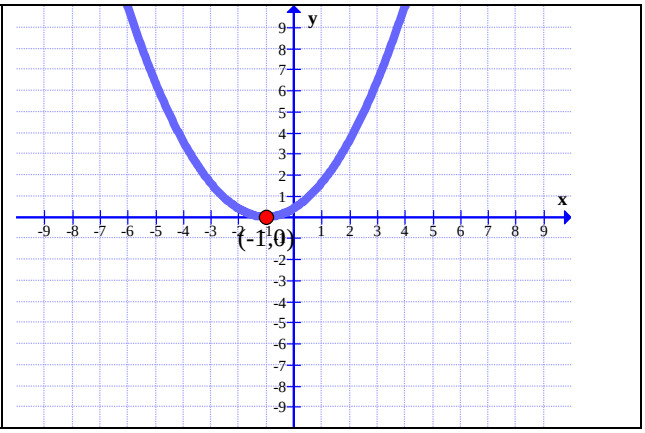
Vertex (5,0)
Axis of symmetry x = 5



23) $r(x) = \frac{2}{5}(x+1)^2$

x	r(x)
1	8/5
0	2/5
-1	0
-2	2/5
-3	8/5

Vertex (-1,0)
Axis of symmetry x = -1



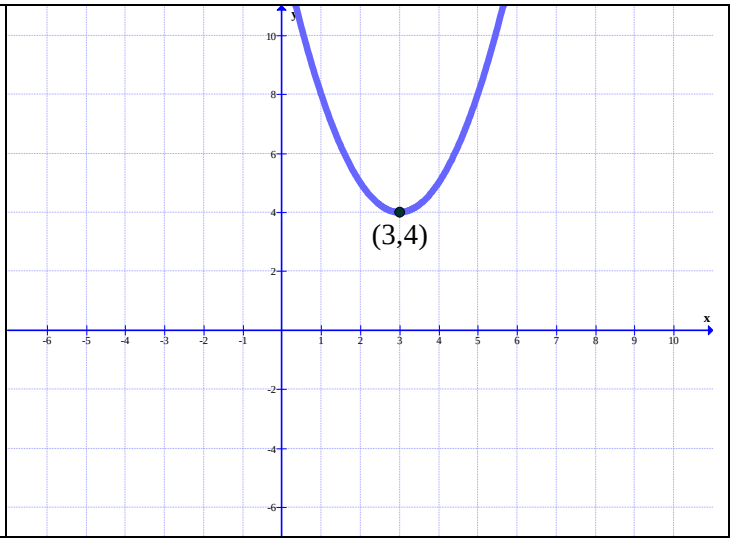
Answers to Odd Problems

Section 5.3

25) $f(x) = (x - 3)^2 + 4$

x	f(x)
5	8
4	5
3	4
2	5
1	8

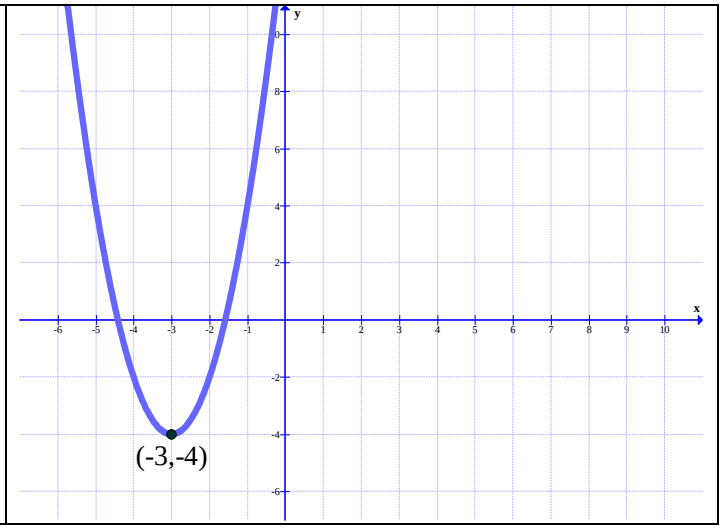
Vertex (3,4)
Axis of symmetry x = 3
Vertex is a minimum point
Minimum y value is y = 4



27) $h(x) = 2(x+3)^2 - 4$

x	h(x)
-1	4
-2	-2
-3	-4
-4	-2
-5	4

Vertex (-3, -4)
Axis of Symmetry x = -3
Vertex is a minimum point
Minimum y value y = -4



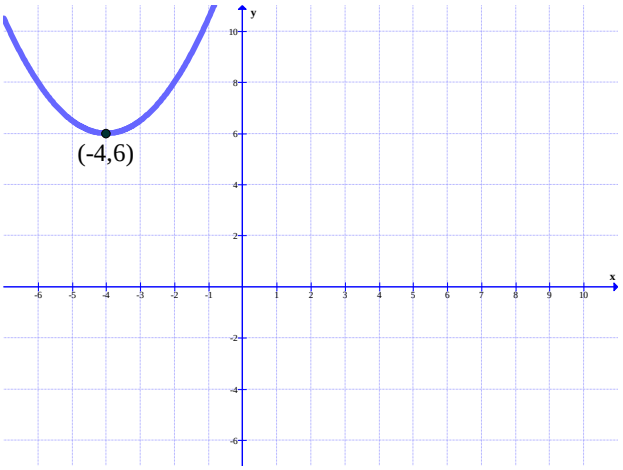
Answers to Odd Problems

Section 5.3

29) g(x) = $\frac{1}{2}(x+4)^2 - 6$

x	g(x)
-2	-4
-3	-5.5
-4	-6
-5	-5.5
-6	-4

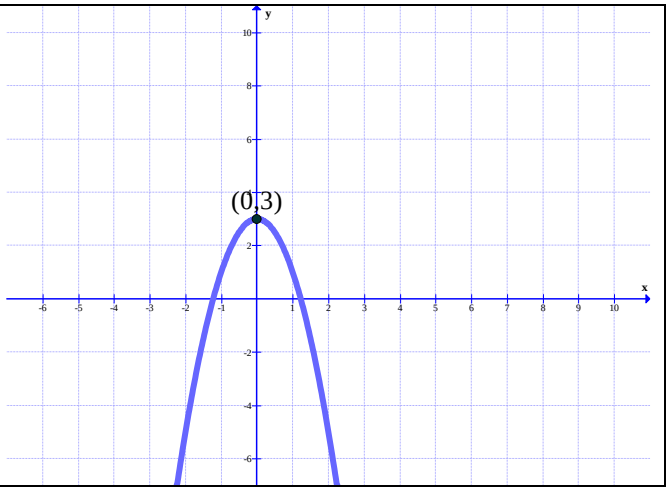
Vertex (-4, -6)
Axis of symmetry x = -4
Vertex is a minimum point
Minimum y value y = -6



31) m(x) = $-2x^2 + 3$

x	m(x)
2	-5
1	1
0	3
-1	1
-2	-5

Vertex (0,3)
Axis of symmetry x = 0
Vertex is a maximum point
Maximum y value y = 3



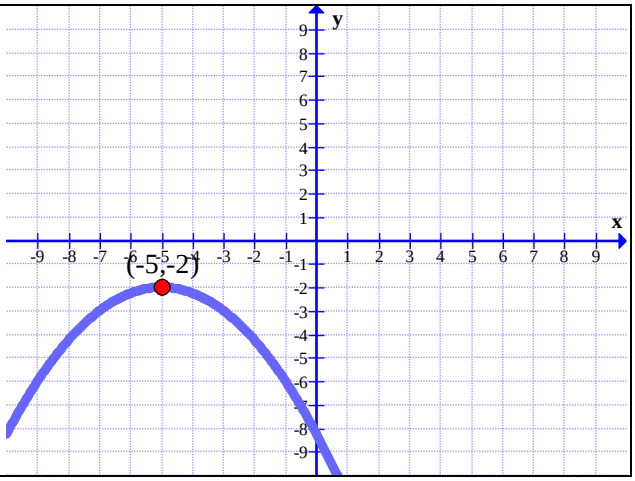
Answers to Odd Problems

Section 5.3

33)

x	f(x)
-3	-3
-4	-9/4
-5	-2
-6	-9/4
-7	-3

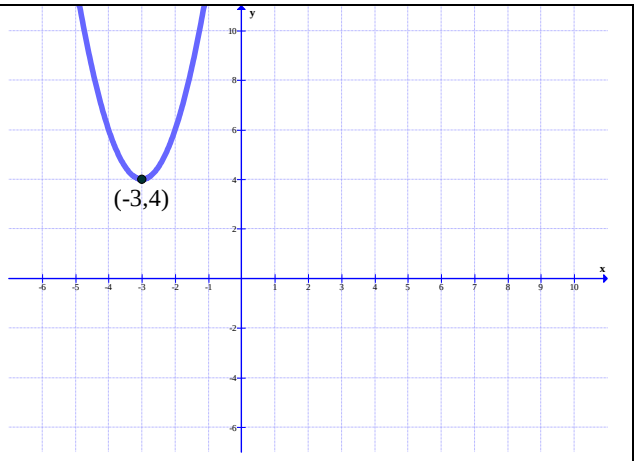
Vertex (-5, -2)
Axis of symmetry x = -5
Vertex is a maximum point
Maximum y-value y = -2



35) $b(x) = 2(x+3)^2 + 4$

x	b(x)
-1	12
-2	6
-3	4
-4	6
-5	12

Vertex (-3, 4)
Axis of symmetry x = -3
Vertex is a minimum point
Minimum y value y = 4



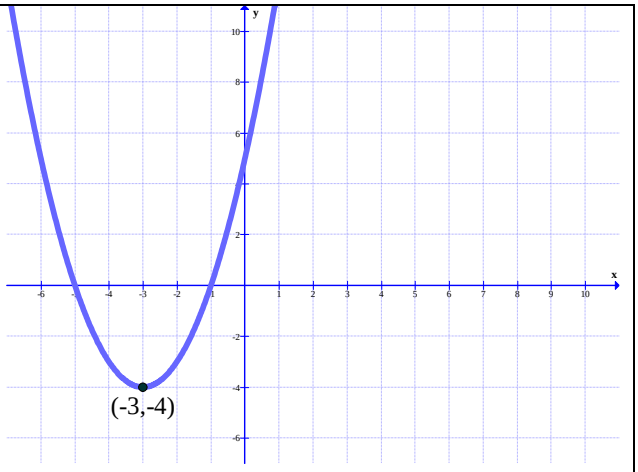
Answers to Odd Problems

Section 5.3

37) f(x) $x^2 + 6x + 5$

x	f(x)
-1	0
-2	-3
-3	-4
-4	-3
-5	0

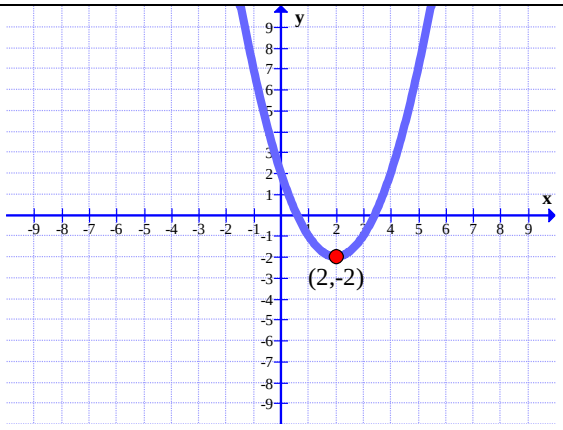
Vertex (-3, -4)
Axis of symmetry x = -3
Vertex is a minimum point
Minimum y value y = -4



39)

x	k(x)
4	2
3	-1
2	-2
1	-1
0	2

Vertex (2,-2)
Axis of symmetry x =2
Vertex is a minimum point
Minimum y value, y = -2



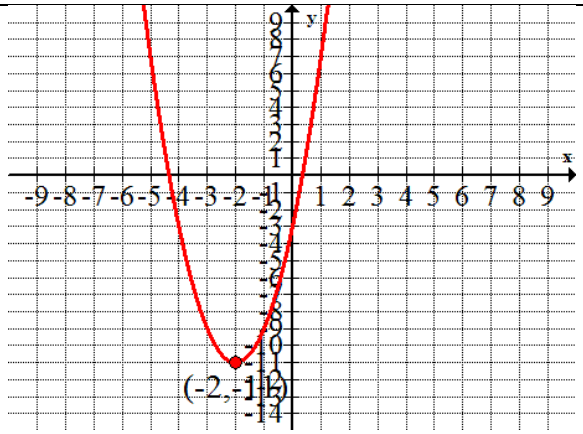
Answers to Odd Problems

Section 5.3

41) $f(x) = 2x^2 + 8x - 3$

x	f(x)
-4	-3
-2	-9
-2	-11
-1	-9
0	-3

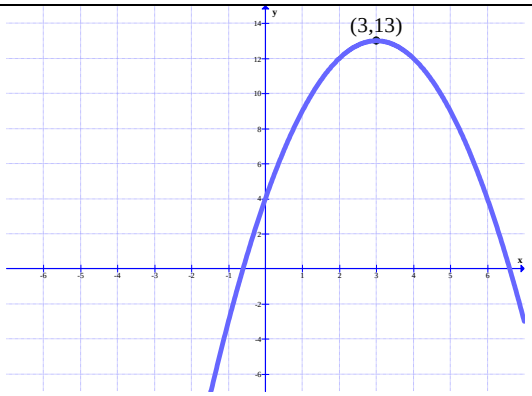
Vertex (-2, -11)
Axis of symmetry x = -2
Vertex is a minimum point
Minimum y value y = -11



43) $f(x) = -x^2 + 6x + 4$

x	f(x)
5	9
4	12
3	13
2	12
1	9

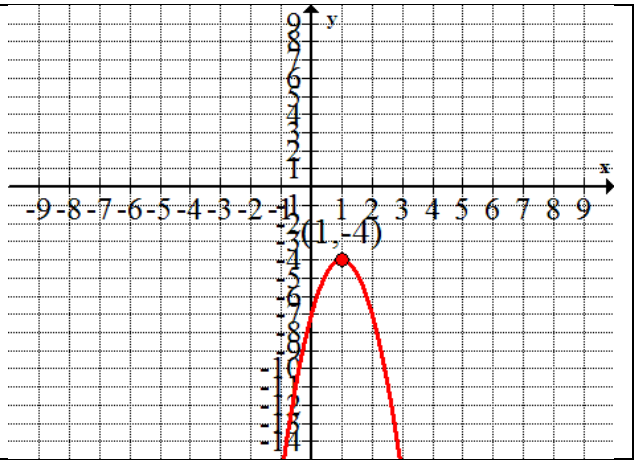
Vertex (3, 13)
Axis of symmetry x = 3
Vertex is a maximum point
Maximum y value y = 13



45) $k(x) = -3x^2 + 6x - 7$

x	k(x)
-1	-16
0	-7
1	-4
2	-7
3	-16

Vertex (1,-4)
Axis of symmetry x = 1
Vertex is a maximum point
Maximum y value y = -4

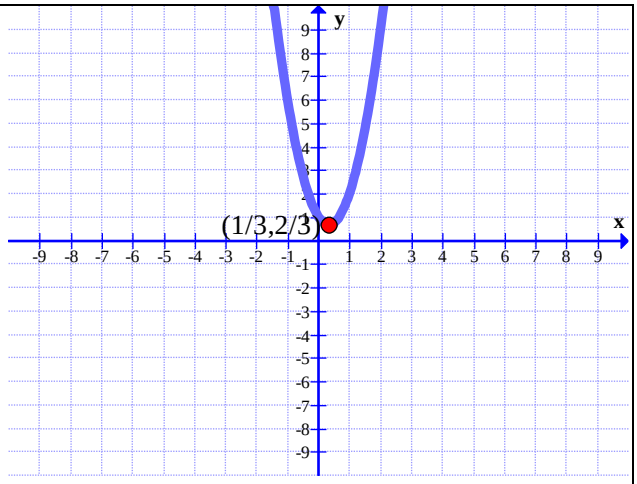


Answers to Odd Problems

Section 5.3

47)

x	f(x)
2	9
1	2
1/3	2/3
0	1
-1	6



Vertex (1/3, 2/3)
Axis of symmetry x = 1/3
Vertex is a minimum point
Minimum y value y = 2/3

Section 5.4

1a) 5 seconds
1b) 200 feet
3a) 2 seconds
3b) 78.4 meters
5a) 1 second
5b) 16 feet
7a) 14 feet
7b) September
9a) 15 feet
9b) October
11a) July
11b) 101 degrees

Section 5.5

1) x=4
x = 1 is extraneous

3) y=9
y = 25 is extraneous

5) x=4
x = 16 is extraneous

11) x = -9, -2

13) y = -5, -3

15) $x = 7, 22/5$

17) $x = 0, 1/5$

19) x= -3/5, -1

21) $y = \pm 3i, \pm 1$

23) $a = \pm\sqrt{6}i, \pm 1$

25) $y = -\frac{1}{27}, 1$

27) x = -216, 1

29) y = 243, 1

Answers to Odd Problems

Section 5.6

1a) x = -4,3 1b) $(-\infty,-4) \cup (3,\infty)$ 1c) (-4,3) 1d) $(-\infty,-4] \cup [3,\infty)$ 1e) [-4,3]
3a) x = -4,3 3b) (-4,3) 3c) $(-\infty,-4) \cup (3,\infty)$ 3d) [-4,3] 3e) $(-\infty,-4] \cup [3,\infty)$
5a) x = 2 5b) $(-\infty,\infty)$ 5c) No solution 5d) $(-\infty,\infty)$ 5e) x = 2
7a) x = 3 7b) No Solution 7c) $(-\infty,3) \cup (3,\infty)$ 7d) x = 3 7e) $(-\infty,\infty)$
9a) No Solution 9b) No Solution 9c) $(-\infty,\infty)$ 9d) No Solution 9e) $(-\infty,\infty)$
11a) No Solution 11b) $(-\infty,\infty)$ 11c) No Solution 11d) $(-\infty,\infty)$ 11e) No Solution
13a) x = -8, 2 13b) $(-\infty,-8) \cup (2,\infty)$ 13c) (-8,2) 13d) $(-\infty,-8] \cup [2,\infty)$ 13e) [-8,2]
15a) x =1, 5 15b) $(-\infty,1) \cup (5,\infty)$ 15c) (1,5) 15d) $(-\infty,1] \cup [5,\infty)$ 15e) [1,5]
17a) x = 1, 5 17b) $(-\infty,1) \cup (5,\infty)$ 17c) (1,5) 17d) $(-\infty,1] \cup [5,\infty)$ 17e) [1,5]
19a) x = -11, 3 19b) (-11,3) 19c) $(-\infty,-11) \cup (3,\infty)$ 19e) $(-\infty,-11] \cup [3,\infty)$
19e) [-11,3]
21a) x = 0, 10 21b) (0,10) 21c) $(-\infty,0) \cup (10,\infty)$ 21d) [0,10] 21e) $(-\infty,0] \cup [10,\infty)$
23a) x = -6
23b) No solution
23c) $(-\infty - 6) \cup (-6,\infty)$
23d) x = -6
23e) $(-\infty,\infty)$
it would also be correct to write $(-\infty,-6] \cup [-6,\infty)$ although the first answer is preferable.
25a) No Solution
25b) $(-\infty,\infty)$
25c) No solution
25d) $(-\infty,\infty)$
25e) No solution
27a) No Solution
27b) $(-\infty,\infty)$
27c) No solution
27d) $(-\infty,\infty)$
27e) No solution

Answers to Odd Problems