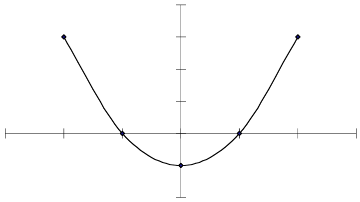
Section 3.1

2. It fo

6. A(0.
D(4.



10. a)

14. a)

22. Show that d(A, C) = d(B, C) = $5\sqrt{5}$

Section 3.2

4. Line. x-int.: (-1.5, 0), y-int.: (0, -3)

12. Horizontal parabola.
x-int.:(-4, 0), y-int.:(0, ± $\sqrt{2}$)

32. It is the upper half of the circle $x^2 + y^2 = 4$ with center (0, 0) and r = 2

36. $(x+4)^2 + (y-1)^2 = 9$

46. $(x+1)^2 + (y-4)^2 = 20$

50. C(5, 0), r = $\sqrt{7}$

66. Find the distance between the two stations using the Pythagorean theorem and compare that to the sum of their signal strengths.

Section 3.3

2. $m = \frac{1}{5}$

14. All four lines travel through the origin. Those lines with positive slopes go up to the right and those lines with negative slopes to up to the left.

20. a. y = 2
b. x = -4

22. 2x - 3y = -14

30. 2x - 3y = -7

34. $y = \frac{6}{5}x + \frac{17}{5}$

36. 3x - 4y = -21

56. a. P = -125t + 8250
b. t = 26 months
c. The endpoints of the graph are (0, 8250) and (66, 0)

60. a. $T = \frac{1.7}{99}t + 11.8$
b. During the year 1910

64. a. F = -40 b. C = 160 and F = 320

Section 3.4

6. a. - 4a + 3 b. 4a + 3
c. 4a – 3 d. - 4a – 4h + 3
e. - 4a - 4h + 6 f. - 4

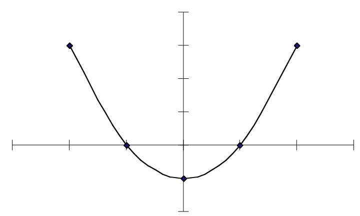
10. a. $2a^2 + 3a - 7$ b. $2a^2 - 3a - 7$
c.. $-2a^2 - 3a + 7$
d. $2a^2 + 4ah + 2h^2 + 3a + 3h - 7$
e. $2a^2 + 2h^2 + 3a + 3h - 14$
f. $4a + 2h + 3$

12. a. $\frac{-5a+2}{a}$ b. $\frac{1}{2a-5}$
c. $2\sqrt{a} - 5$ d. $\sqrt{2a-5}$

16. a. $[-5, 7]$ b. $[-1, 2]$
c. $f(1) = -11$ d. $x = -3, -1, 3, 5$
e. $(-3, -1) \cup (3, 5)$

24. $\left(-\frac{3}{4}, 2\right) \cup (2, \ )$

34. a.



b. D = (-∞, ∞), R = [-1, ∞)
c. Decreasing on (-∞, 0]
Increasing on [0, ∞)

46. $f(x) = -\frac{3}{2}x + 4$

60. a. $y(x) = \frac{4}{x}$ b. $S(x) = 3x + 4 + \frac{12}{x}$

68. a. $L(x) = \sqrt{2500 + (x-2)^2}$
b. approx. 57.9 feet ($25\sqrt{5} + 2$ ft.)

Section 3.5

2. Even 4. Odd 8. Neither

12. Given: g(x) = | x | and f(x) = | x - c |
 To find f(x):
 For c = -3, shift g(x) left 3 units
 For c = 1, shift g(x) right 1 unit
 For c = 3, shift g(x) right 3 units

14. Given: $g(x) = 2x^2$ and $f(x) = 2x^2 - c$
 to find f(x):
 For c = -4, shift g(x) up 4 units
 For c = 2, shift g(x) down 2 units
 For c = 4, shift g(x) down 4 units

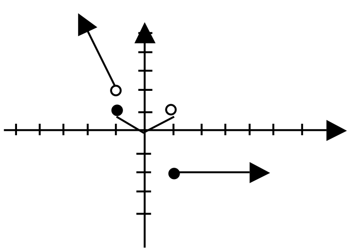
30. (-1, -8)

36. graph of f horizontally stretched by 2 and shifted down 3

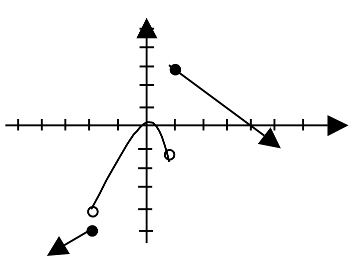
40. Given f(x) as drawn:
 a. shift f right 2 units
 b. shift f left 2 units
 c. shift f down 2 units
 d. shift f up 2 units
 e. reflect f through the x-axis and vertically stretch it by a factor of 2.
 f. reflect f through the x-axis and vertically compress it by a factor of 2.
 g. reflect f through the y-axis and horizontally compress it by a factor of 2.
 h. horizontally stretch f by a factor of 2.
 i. reflect f about the x-axis, shift it left 4 units and down 2 units.
 j. shift f right 4 units and up 2.

44. a. $y = f(x-2)+2$
 b. $y = -f(x)$
 c. $y = -f(x+4)+2$

48.



50.



62. a. D = [-6, -2], R = [-5, -2]
 b. D = [-3, -1], R = [-10, -4]
 c. D = [-4, 0], R = [-5, 1]
 d. D = [-10, -6], R = [-11, -5]
 e. D = [2, 6], R = [-10, -4]
 f. D = [-6, -2], R = [4, 10]

64. $C(x) = \begin{cases} 0.25 & \text{if } x \le 1 \\ 0.10 + 0.15x & \text{if } x > 1 \end{cases}$

Section 3.6

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

16. a. $x = -\frac{8}{3}, \frac{3}{2}$
 b. -26.04 is a minimum
 c. Graph is a parabola with vertex $\left(-\frac{7}{12}, -\frac{625}{24}\right)$, opens up and has the x-intercepts obtained from part a.

24. $y = -(x - 2)^2 + 4$

26. $y = \frac{5}{9}(x+1)^2 - 2$

30. $y = \frac{7}{64}(x-4)^2 - 7$

Section 3.7

2. a. -4 b. -14
 c. -45 d. $-\frac{9}{5}$

10. a. $3x^2 - 6x + 3$ b. $3x^2 - 1$
 c. $27x^4$ d. x - 2

18. a. $27x^3 + 18x^2$ b. $3x^3 + 6x^2$
 c. -144 d. 135

Section 3.8

6. f is not one-to-one

22. $f^{-1}(x) = \frac{-3x+1}{x}$

24. $f^{-1}(x) = \frac{2x}{x-4}$

26. $f^{-1}(x) = \sqrt{\frac{x-2}{5}}$

40. a. The graphs intersect on the line y = x
 b. D = [1, 10], R = [0, 9]
 c. $D_1 = [0, 9]$, $R_1 = [1, 10]$

48. a. graph
 b. $f(x) = 201.15x - 389{,}469.5$
 c. $f^{-1}(x) = \frac{x + 389{,}469.5}{201.15}$; the inverse gives the year when x radio stations were on the air.
 d. 1975

Section 3.9

8. $k = \frac{2500}{3}$ 12. $k = \frac{8}{5}$

16. a. $I = \frac{k}{d^2}$ b. $k = 2.5 \times 10^9$
 c. 89.7 candlepower

24. a. $V = k\frac{nT}{P} = \frac{knT}{P}$ b. V is doubled.

Pg. 226:

92. 375 calls