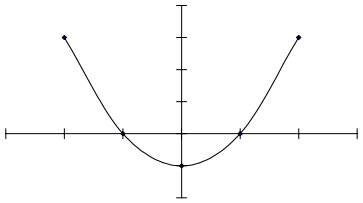
Section 3.1

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

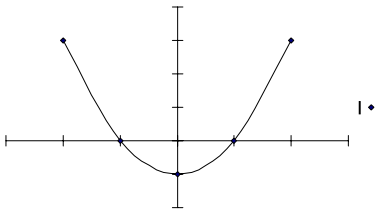
4. Line. x-int.: (-1.5, 0), y-int.: (0, -3)
12. Horizontal parabola.
    x-int.:(-4, 0), y-int.:(0, $\pm\sqrt{2}$)
32. It is the upper half of the
    circle $x^2 + y^2 = 4$ with center (0, 0) and r = 2
34. It is the left half of the circle $x^2 + y^2 = 25$ with
    center (0,0) and r=5
36. $(x+4)^2 + (y-1)^2 = 9$
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

4. $f(-2) = \frac{2}{5}$, $f(0) = 0$, $f(3)$ is undefined
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. $f(1) = -1$ 1 d. $x = -3, -1, 3, 5$
    e. $(-3, -1) \cup (3, 5)$
24. $\left[\frac{3}{4}, 2\right) \cup (2, \infty)$
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

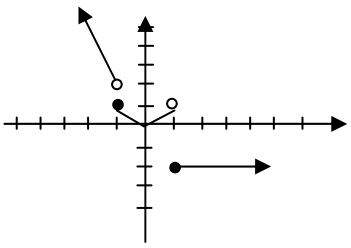
30. (-1, -8)

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

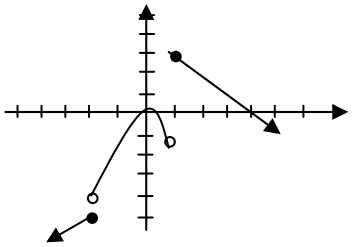
40. Given f(x) as drawn:
a. shift f right 2 units
b. shift f left 2 units
c. shift f down 2 units
d. shift f up 2 units
e. reflect f through the x-axis and vertically stretch it by a factor of 2.
f. reflect f through the x-axis and vertically compress it by a factor of 2.
g. reflect f through the y-axis 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. $C(x) = \begin{cases} 0.25 & \text{if } x \le 1 \\ 0.10 + 0.15x & \text{if } x > 1 \end{cases}$

66. $C(x) = \begin{cases} 0.0577 & \text{if } 0 \le x \le 1000 \\ 4.50 + 0.0532 & \text{if } 1000 < x \le 5000 \\ 15.00 + 0.0511x & \text{if } x > 5000 \end{cases}$

Section 3.6

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

14. (a) x=-6, 0
(b) 9 is a maximum
(c) graph is a parabola that opens down with vertex at (-3, 9)

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. $k = \frac{8}{5}$

14. (a) $F = kx$

    (b) $k = \frac{40}{3}$

    (c) 20 lb.

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