

Section 3.1

2. It forms a star
 6. A(0, 4), B(-4, 0), C(0, -4), D(4, 0), E(2, 2), F(-2, -2)
 10. a) $\sqrt{157}$ b) $\left(1, \frac{1}{2}\right)$
 14. a) $\sqrt{241}$ b) $\left(-2, -\frac{1}{2}\right)$
 22. Show that $d(A, C) = d(B, C) = 5\sqrt{5}$

Section 3.2

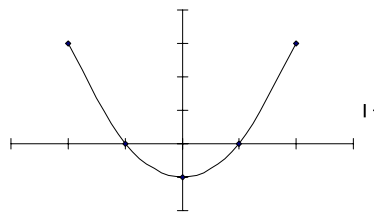
4. Line. x-int.: (-1.5, 0), y-int.: (0, -3)
 12. Horizontal parabola.
 x-int.: (-4, 0), y-int.: $(0, \pm\sqrt{2})$
 32. It is the upper half of the circle $x^2 + y^2 = 4$ with center (0, 0) and $r = 2$
 34. It is the left half of the circle $x^2 + y^2 = 25$ with center (0,0) and $r=5$
 36. $(x+4)^2 + (y-1)^2 = 9$
 46. $(x+1)^2 + (y-4)^2 = 20$
 50. C(5, 0), $r = \sqrt{7}$
 70. 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.
 22. a. $y = 2$
 b. $x = -4$
 24. $2x - 3y = -14$
 32. $2x - 3y = -7$
 36. $y = \frac{6}{5}x + \frac{17}{5}$
 38. $3x - 4y = -21$
 58. a. $P = -125t + 8250$
 b. $t = 26$ months
 c. The endpoints of the graph are (0, 8250) and (66, 0)
 62. a. $T = \frac{1.7}{99}t + 11.8$
 b. During the year 1910
 66. 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. $\sqrt{2a-5}$
 20. a. $[-5, 7]$ b. $[-1, 2]$
 c. $f(1) = -11$ d. $x = -3, -1, 3, 5$
 e. $(-3, -1) \cup (3, 5)$
 28. $\left[\frac{3}{4}, 2\right) \cup (2, \infty)$
 40. a.



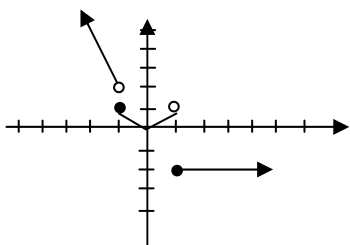
- b. $D = (-\infty, \infty)$, $R = [-1, \infty)$
 c. Decreasing on $(-\infty, 0]$
 Increasing on $[0, \infty)$
 54. $f(x) = -\frac{3}{2}x + 4$
 68. a. $y(x) = \frac{4}{x}$ b. $S(x) = 3x + 4 + \frac{12}{x}$
 76. a. $L(x) = \sqrt{2500 + (x-2)^2}$
 b. approx. 57.9 feet ($25\sqrt{5} + 2$ ft.)

Section 3.5

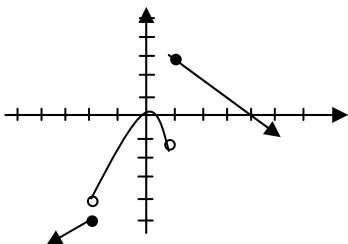
4. Even 6. Odd 10. Neither

14. Given: $g(x) = |x|$ and $f(x) = |x - c|$ To find $f(x)$:For $c = -3$, shift $g(x)$ left 3 unitsFor $c = 1$, shift $g(x)$ right 1 unitFor $c = 3$, shift $g(x)$ right 3 units16. Given: $g(x) = 2x^2$ and $f(x) = 2x^2 - c$ to find $f(x)$:For $c = -4$, shift $g(x)$ up 4 unitsFor $c = 2$, shift $g(x)$ down 2 unitsFor $c = 4$, shift $g(x)$ down 4 units32. $(-1, -8)$ 38. graph of f horizontally stretched by 2 and shifted down 342. Given $f(x)$ as drawn:a. shift f right 2 unitsb. shift f left 2 unitsc. shift f down 2 unitsd. shift f up 2 unitse. 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 2.46. a. $y = f(x - 2) + 2$ b. $y = -f(x)$ c. $y = -f(x + 4) + 2$

50.



52.



64. 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. $D = [-6, -2]$, $R = [4, 10]$

$$66. T(x) = \begin{cases} .01x & \text{if } x \leq 500,000 \\ .0125x - 1250 & \text{if } x > 500,000 \end{cases}$$

$$68. C(x) = \begin{cases} 0.0577x & \text{if } 0 \leq x \leq 1000 \\ 4.50 + 0.0532x & \text{if } 1000 < x \leq 5000 \\ 15.00 + 0.0511x & \text{if } x > 5000 \end{cases}$$

Section 3.610. $f(x) = -4(x - 2)^2 + 3$ 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 minimumc. Graph is a parabola with vertex $(-\frac{7}{12}, -\frac{625}{24})$,opens up and has the x -intercepts obtained from part a.24. $y = -(x - 2)^2 + 4$ 26. $y = \frac{5}{9}(x + 1)^2 - 2$ 32. $y = \frac{7}{64}(x - 4)^2 - 7$

46. 125 yd. by 250 yd.

Section 3.72. 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

