Lesson 4.1.3

4-36. See below:

a. No solution, these are parallel lines

b. (2, 3), line is tangent to parabola

c. There are two intersection points, (4, 2) and (1, –1)

d. Infinite solutions, they are the same line.

4-37. See below:

a. At this point, students may expect two solutions. However, in part (b) they will discover that there are actually four solutions.

b. There are four solutions: (4, 3), (–4, 3), (–3, – 4), and (3, –4).

c. Answers vary; expected response: $x^2 + (x^2 - 13)^2 = 25$ and $y^2 + y - 12 = 0$; the equation in terms of y is easier to solve.

d. When $y = 3$, $x = \pm\ 4$. When $y = -4$, $x = \pm\ 3$.

4-38. See below:

a. Some strategies include flipping the parabola upside-down, decreasing the radius of the circle, translating the parabola up above the circle, and widening the parabola to miss the circle.

b. Answers vary.

Review & Preview

4-40. See below:

a. (–2, –11), The lines intersect at one point

b. infinite solutions, The equations are equivalent

c. (2, 45) and (–1. 3), The line and parabola intersect twice

d. (3, 6), The line is tangent to the parabola

4-41. See below:

a. $y = 3$ or $y = -5$

b. $x = -\frac{99}{4}$

c. $y = 1$

d. $x = -13$

4-42. See below:

a. E $t(n) = -2 + 3n$; R $t(0) = -2$, $t(n + 1) = t(n) + 3$

b. E $t(n) = 6(\frac{1}{2})^n$; R $t(0) = 6$, $t(n + 1) = \frac{1}{2}t(n)$

c. $t(n) = 10 - 7n$

d. $t(n) = 5(1.2)^n$

e. $t(4) = 1620$

4-43. 19.79 feet

4-44. See below:

a. $m = -\frac{6}{5}$, $b = (0, -7)$

b. $m = \frac{3}{2}$, $b = (0, -5)$

c. $m = 2$, $b = (0, -12)$

4-45. See below:

a. not function D: $-3 \le x \le 3$ R: $-3 \le y \le 3$

b. a function D: $-2 \le x \le 3$ R: $-2 \le x \le 2$

4-46. $(-7, 11)$