Name: _____ Date: _____

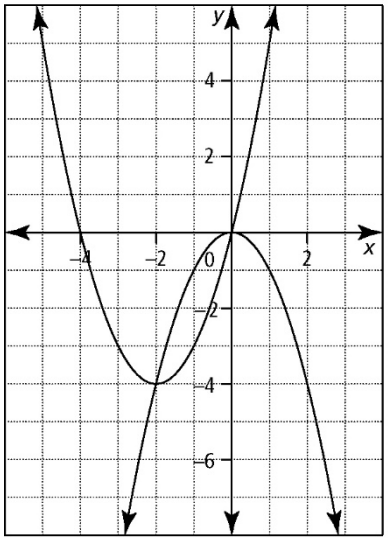
Section 8.1 Extra Practice

1. Verify that (1, −3) and (4, 0) are solutions to the following system of equations.

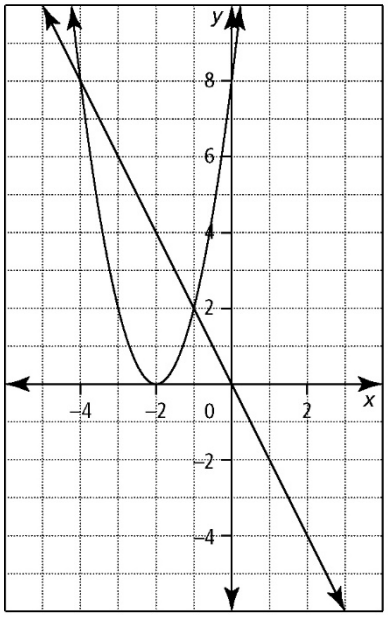
$x^2 - 4x - y = 0$
$x - y - 4 = 0$

2. Use the graph to solve the system of equations. Then, write the system of equations represented in each graph.

a)



b)



3. Solve each system of equations by graphing. Express answers to the nearest whole units. Verify your solutions.

a) $x^2 - 4x - 3y = 5$
$x = 2$

b) $y = (x - 2)(x - 7)$
$y = x - 7$

c) $0 = x - 2y + 10$
$y = -1(x - 3)^2 + 4$

d) $2x^2 - 5x - y = -1$
$7x + y = 1$

4. Solve each system of equations by graphing. Express answers to the nearest hundredth.

a) $x^2 + 8x - y = -12$
$x^2 - y = 8$

b) $y = 2x^2 - x + 1$
$y = x^2 + 9x - 8$

c) $y = 5x^2 - 10x + 5$
$y = -x^2 - 3x + 10$

d) $y = 3(x + 4)^2 - 2$
$y = -2(x + 3)^2 - 2$

5. When the cost to produce n items is equal to the revenue from selling n items, this is called the breakeven point. If the cost is \$100 plus a variable cost, the function is $C(n) = 100 + (2 - 0.01n)n$. The selling price is \$2.50 per unit. The revenue function is $R(n) = 2.50n$. Determine the breakeven point graphically, to the nearest whole number of units.

6. The ages of Max and his father add up to 35 years. Max's father's age is the same as five more than the square of Max's age.

a) Write a system of equations to represent this situation. Define your variables.

b) Solve the system graphically. Are all possible solutions meaningful? Explain.

c) How old are Max and his father?

Section 8.2 Extra Practice

1. Verify that (−1, 11) and (2, 5) are solutions to the following system of equations.

$2x + y = 9$

$2x^2 - 4x - y = -5$

2. Verify that (−1, − 4) is a solution to the following system of equations.

$y = x^2 + 2x - 3$

$y = -x^2 - 2x - 5$

3. Solve each system of equations by substitution. Verify your solutions.

a) $y = 2x + 1$

$y = x^2 - 5x + 13$

b) $3x + y - 4 = 0$

$2x^2 - 4x - y - 2 = 0$

c) $y = -x^2 - 3x + 14$

$y = 3x^2 + 5x - 18$

d) $4x + y + 5 = x^2$

$x^2 = 5x + 2y$

4. Solve each system of equations by elimination.

a) $3x^2 + x - 3y = -8$

$x + 3y = 9$

b) $y = 2x^2 - x + 1$

$2y = 2x^2 - x - 1$

c) $x + 6y = 12$

$\frac{-1}{2}x^2 + \frac{5}{3}x + y = 2$

d) $x^2 + y = 4x + 5$

$5x + \frac{1}{3}y = x^2$

5. Solve each system of equations algebraically. Round answers to the nearest hundredth.

a) $y = \frac{1}{3}x^2 + \frac{2}{3}x$

$3y = 2x^2 + 3x - 1$

b) $x^2 + 5x - y = 6$

$2x^2 - x - y = -3$

6. Consider the following system of equations.

$x^2 + 6x + y + k = 0$

$3x + y + k = 0$

a) Determine the value of k if a solution is (−3, 2).

b) Determine the second solution.

7. Consider the following system of equations.

$y = x^2 - 2x - 3$

$y = k$

Determine the value of k, if the system has

a) two solutions

b) one solution

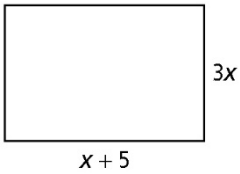
c) no solution

8. A parabola's vertex is at (−4, 4) and one of its x-intercepts is at (−6, 0). A second parabola's vertex is at (1, −9) and its y-intercept is at (0, −8).

a) Determine the equations of the parabolas.

b) Solve the system of equations to determine the point(s) of intersection.

9. Consider the given rectangle.



The perimeter is equal to y, and the area is equal to $3y$.

a) Determine equations to represent the perimeter and area.

b) Solve the system of equations algebraically.

c) Are both solutions possible? Explain.

d) State the value of x, the perimeter, and the area.