Name: _____ Date: _____

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) $x + 6y = 12$
   $\dfrac{-1}{2}x^2 + \dfrac{5}{3}x + y = 2$

   d) $x^2 + y = 4x + 5$
   $5x + \dfrac{1}{3}y = x^2$

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

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

   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
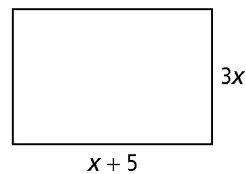
   a) two solutions

   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.

   $3x$

   $x + 5$

   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.