Name _____

2-7 Additional Practice

Linear-Quadratic Systems

Determine the number of solutions for the system of equations.

1. $\begin{cases} y = -x^2 + 3x + 2 \\ y = 3x + 2 \end{cases}$

2. $\begin{cases} y = -x^2 + 2x + 18 \\ y = 5x - 10 \end{cases}$

3. $\begin{cases} y = x^2 + 3x - 5 \\ y = -x^2 - 2x + 1 \end{cases}$

Use substitution to solve the system of equations.

4. $\begin{cases} y = x^2 + 5x - 2 \\ y = 3x - 2 \end{cases}$

5. $\begin{cases} y = -x^2 + x + 12 \\ y = 2x - 8 \end{cases}$

6. $\begin{cases} y = x^2 - 2x - 3 \\ y = 2x - 3 \end{cases}$

Solve each system of inequalities using shading.

7. $\begin{cases} y > 3x^2 + 3x - 5 \\ y < -3x - 5 \end{cases}$

8. $\begin{cases} y > 4x^2 + 8x + 8 \\ 4x + 8 > y \end{cases}$

9. In business, the break-even point is the point (x, y) at which the graphs of the revenue and cost functions intersect. This is the point where the revenue and the expenses are equal. The business is not losing money, but it is not making money either. For one manufacturing company, the revenue from producing x items is given by the function $y = 2x + 12$ and the cost of producing x items is given by $y = -x^2 + 10x + 5$. The numbers represent thousands. Find all break-even points. Interpret the results.

10. Two skaters are practicing at the same time on the same rink. A coordinate grid is superimposed on the ice. One skater follows the path $y = -2x + 32$, while the other skater follows the curve $y = -2x^2 + 18x$. Find all points where they might collide if they are not careful.

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Linear-Quadratic Systems

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3. $\begin{cases} y = x^2 + 3x - 5 \\ y = -x^2 - 2x + 1 \end{cases}$

2

Use substitution to solve the system of equations.

4. $\begin{cases} y = x^2 + 5x - 2 \\ y = 3x - 2 \end{cases}$

(−2, −8) and (0, 2)

5. $\begin{cases} y = -x^2 + x + 12 \\ y = 2x - 8 \end{cases}$

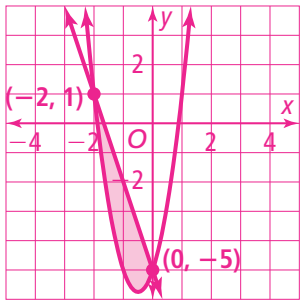
(−5, −18) and (4, 0)

6. $\begin{cases} y = x^2 - 2x - 3 \\ y = 2x - 3 \end{cases}$

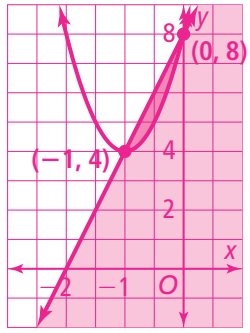
(0, −3) and (4, 5)

Solve each system of inequalities using shading.

7. $\begin{cases} y > 3x^2 + 3x - 5 \\ y < -3x - 5 \end{cases}$



8. $\begin{cases} y > 4x^2 + 8x + 8 \\ 4x + 8 > y \end{cases}$



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(1, 14), (7, 26) The company breaks even when it spends $1,000 to make and sell 14,000 items and it breaks even when it spends $7,000 to make and sell 26,000 items.

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(2, 28), (8, 16)