

Name: _____

Unit 2B: Quadratic Systems of Equations and Inequalities Review

1. What value of x satisfies the following systems of equations? (Solve the system algebraically, and be sure you know how to check the solution in the calculator!) *How do you know how many solutions there will be?*

a. $y = x^2 - 8x - 21$
 $y = 5x + 9$

$(-2, -1)$

b. $y = x^2 + x - 27$
 $y = -2x^2 + x$

$(-3, -21)$

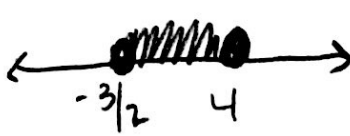
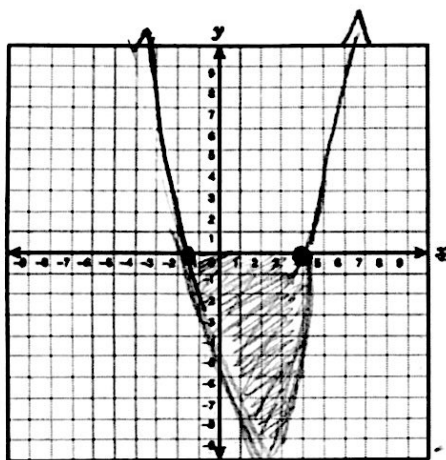
Solution(s) as coordinate points: $(15, 84)$

Solution(s) as coordinate points: $(3, -15)$

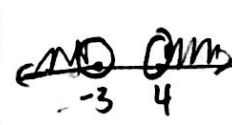
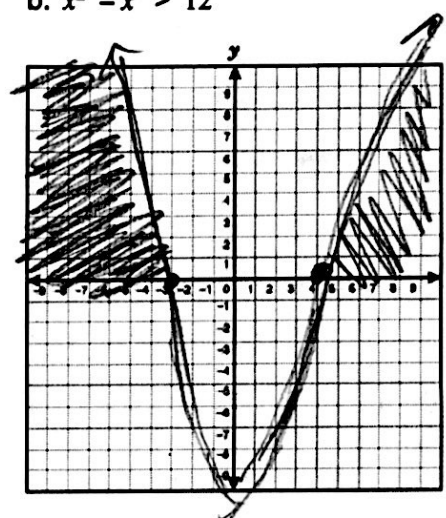
2. Solve the following quadratic inequalities.

a. $2x^2 - 5x - 12 \leq 0$

b. $x^2 - x > 12$



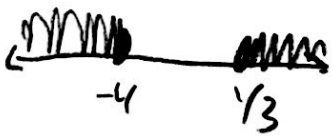
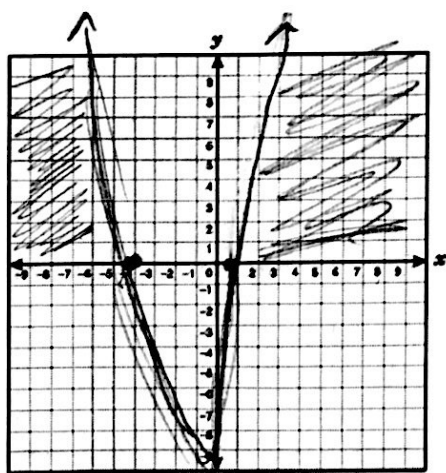
$x \geq -3/2$ AND
 $x \leq 4$



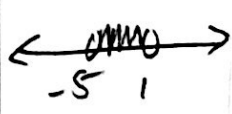
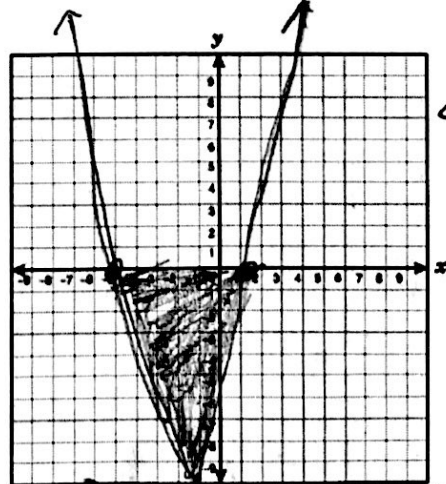
$x < -3$ OR
 $x > 4$

c. $0 \leq 3x^2 + 11x - 4$

d. $0 > x^2 + 4x - 5$



$x \leq -4$ OR
 $x \geq 1/3$



$x > -5$ AND
 $x < 1$

$$1a) x^2 - 8x - 21 = 5x + 9$$

$$-5x - 9 \quad -5x - 9$$

$$-13$$

$$-30$$

$$-15 + 2 \checkmark$$

$$-15 \cdot 2 \checkmark$$

$$x^2 - 13x - 30 = 0$$

$$(x - 15) = 0 \quad (x + 2) = 0$$

$$x = 15$$

$$x = -2$$

Find y: $5(15) + 9 = 84$

$$5(-2) + 9 = -1$$

$$1b) x^2 + x - 27 = -2x^2 + x$$

$$+2x^2 - x$$

$$+2x^2 - x$$

$$3x^2 - 27$$

$$x = 3$$

$$3(x^2 - 9) = 0$$

$$x = -3$$

$$3(x - 3)(x + 3) = 0$$

Find y: $-2(3)^2 + 3$
 -15

$$-2(-3)^2 + 3$$

 -21

$$2a) 2x^2 - 5x - 12 \leq 0$$

$$2x^2 + 3x - 8x - 12 \leq 0$$

$$x(2x + 3) - 4(2x + 3)$$

$$(x - 4)(2x + 3) \leq 0$$

$$x = 4 \quad x = -3/2$$

$$-5$$

$$-24$$

$$-8 + 3$$

$$-8 \cdot 3$$

$$2b) \quad x^2 - x - 12 > 0$$
$$(x-4)(x+3) > 0$$

$$x=4 \quad x=-3$$

$$2c) \quad 0 \leq 3x^2 + 11x - 4$$

$$\begin{array}{r|l} 11 & -12 \\ \hline 12-1 & 12 \cdot -1 \end{array}$$

$$3x^2 + 12x - 1x - 4$$
$$3x(x+4) - 1(x+4)$$

$$(3x-1)(x+4)$$

$$x = 1/3 \quad x = -4$$

$$2d) \quad 0 > x^2 + 4x - 5$$
$$(x+5)(x-1)$$

$$x = -5 \quad x = 1$$