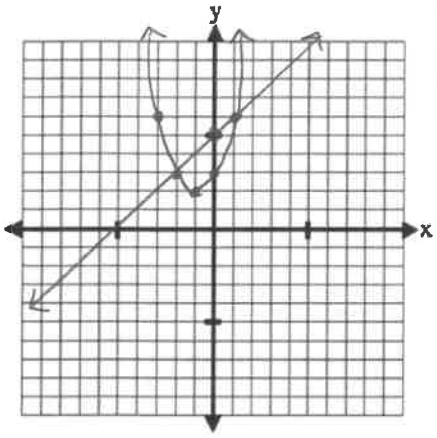
Name: Key Date: _____

Solving Systems of Quadratic Equations/Inequalities Homework

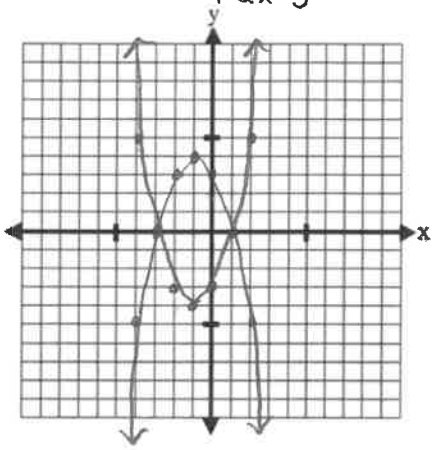
Solve each of the following systems of equations/inequalities by graphing.

1) $y = x^2 + 2x + 3$
$2y - 2x = 10$



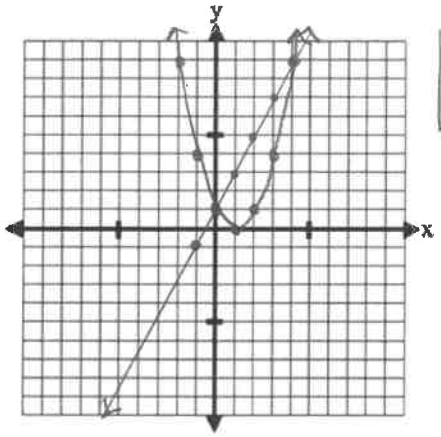
(1, 6)
(-2, 3)

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



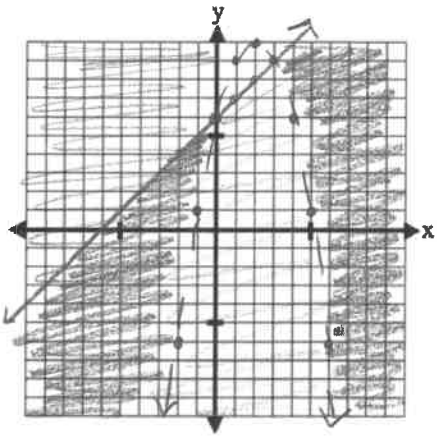
(-3, 0)
(1, 0)

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

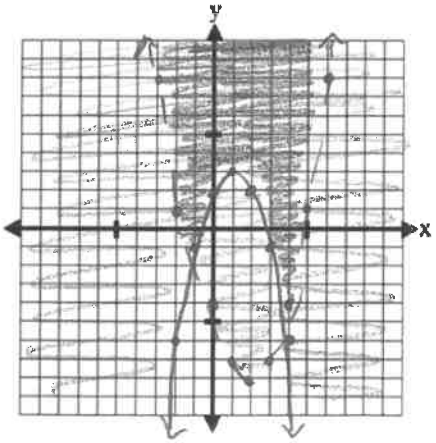


(0, 1)
(4, 9)

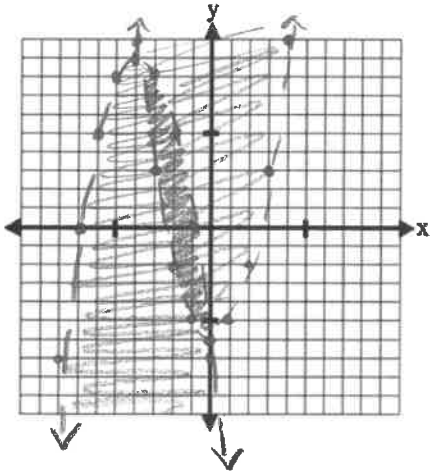
4) $y > -x^2 + 4x + 6$
$y \leq x + 6$



5) $y \geq -x^2 + 2x + 2$
$y > x^2 - \frac{3}{4}x - 4$



6) $y < -(x+4)^2 + 9$
$y > x^2 - 6$



Solve each of the following systems of equations by substitution or elimination.

7) $y = -4x + 1$
$y = 2x^2 - 5$

$2x^2 - 5 = -4x + 1$
$2x^2 + 4x - 6 = 0$
$2(x^2 + 2x - 3) = 0$
$x^2 + 2x - 3 = 0$
$(x+3)(x-1) = 0$
$x = -3 \quad x = 1$

$y = -4(-3) + 1 = 12 + 1 = 13$
$y = -4(1) + 1 = -4 + 1 = -3$

$(-3, 13)$
$(1, -3)$

8) $x + y = 12 \rightarrow y = 12 - x$
$y = 5x^2 - 20x + 8$

$12 - x = 5x^2 - 20x + 8$
$0 = 5x^2 - 19x - 4$
$0 = (5x + 1)(x - 4)$
$x = -\frac{1}{5} \quad x = 4$

$\left(-\frac{1}{5}, \frac{61}{5}\right) \quad (4, 8)$

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

$x^2 - 5x + 7 = 2x + 1$
$x^2 - 7x + 6 = 0$
$(x-6)(x-1) = 0$
$x = 6 \quad x = 1$

$y = 2(6) + 1 = 12 + 1 = 13$
$y = 2(1) + 1 = 2 + 1 = 3$

$(6, 13)$
$(1, 3)$

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

$2x + 3 = 3x^2 - 5$
$0 = 3x^2 - 2x - 8$
$(3x + 4)(x - 2) = 0$
$x = -\frac{4}{3} \quad x = 2$

$y = 2\left(-\frac{4}{3}\right) + 3 = -\frac{8}{3} + \frac{9}{3} = \frac{1}{3}$
$y = 2(2) + 3 = 4 + 3 = 7$

$\left(-\frac{4}{3}, \frac{1}{3}\right)$
$(2, 7)$

11) $y = (x-2)^2 + 1$
$y = -x^2 + 5$

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

$(0, 5)$
$(2, 1)$

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

$x^2 + 2x - 3 = -x^2 - 2x + 3$
$2x^2 + 4x - 6 = 0$
$2(x^2 + 2x - 3) = 0$
$x^2 + 2x - 3 = 0$
$(x+3)(x-1) = 0$
$x = -3 \quad x = 1$

$y = (-3)^2 + 2(-3) - 3 = 9 - 6 - 3 = 0$
$y = (1)^2 + 2(1) - 3 = 1 + 2 - 3 = 0$

$(-3, 0)$
$(1, 0)$

13) $y = x^2 - 4x - 20$
$y = x - 6$

$x^2 - 4x - 20 = x - 6$
$x^2 - 5x - 14 = 0$
$(x-7)(x+2) = 0$
$x = 7 \quad x = -2$

$y = 7 - 6 = 1$
$y = -2 - 6 = -8$

$(7, 1)$
$(-2, -8)$

14) $y = x^2 + 8x + 15$
$y = -6x - 9$

$x^2 + 8x + 15 = -6x - 9$
$x^2 + 14x + 24 = 0$
$(x + 12)(x + 2) = 0$
$x = -12 \quad x = -2$

$y = -6(-12) - 9 = 72 - 9 = 63$
$y = -6(-2) - 9 = 12 - 9 = 3$

$(-12, 63)$
$(-2, 3)$