Name: Key Class Period: _____

Systems of Equations Practice

Linear and Linear – Solve using either Substitution or Elimination. SHOW ALL WORK!!

1. $-5x + y = -2$
$-3x + 6y = -12$

$30x - 6y = 12$
$-3x + 6y = -12$
$27x = 0$
$\frac{27x}{27} = \frac{0}{27}$
$x = 0$

$-5(0) + y = -2$
$0 + y = -2$
$y = -2$

$(0, -2)$

2. $x = -3y + 1$
$3x + 3y = 15$

$3(-3y+1) + 3y = 15$
$-9y + 3 + 3y = 15$
$-6y + 3 = 15$
$-6y = 12$
$y = -2$

$x = -3(-2) + 1$
$x = 6 + 1 = 7$

$(7, -2)$

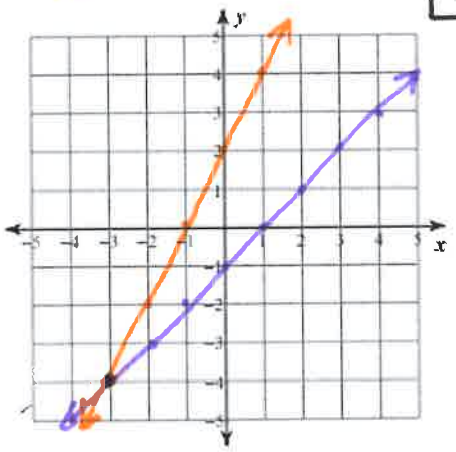
3. $3x - 8y = 24$
$(8)(-5x + y = -3)$

$3x - 8y = 24$
$-40x + 8y = -24$
$-37x = 0$
$\frac{-37x}{-37} = \frac{0}{-37}$
$x = 0$

$3(0) - 8y = 24$
$0 - 8y = 24$
$-8y = 24$
$y = -3$

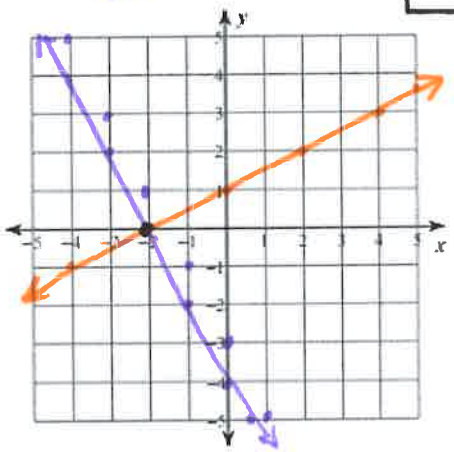
$(0, -3)$

4. $y = 2x + 2$
$y = x - 1$



$(-3, -4)$

5. $y = \frac{1}{2}x + 2$
$y = -2x - 4$



$(-2, 0)$

Linear and Quadratic – Solve by either Substitution or Elimination. SHOW ALL WORK!!

6. $y = x^2 - 6x + 3$
$y = -2x + 3$

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

$x = 0$ | $x - 4 = 0$
$x = 4$

$y = -2(0) + 3$
$y = 3$

$y = -2(4) + 3$
$y = -8 + 3 = -5$

$(0, 3)$ and $(4, -5)$

7. $y = -x^2 + 1$
$y = x - 5$

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

$x + 3 = 0$ | $x - 2 = 0$
$x = -3$ | $x = 2$

$y = -3 - 5$ | $y = 2 - 5$
$y = -8$ | $y = -3$

$(-3, -8)$ and $(2, -3)$

8. $y = x^2 - 2$
$y = 2x + 1$

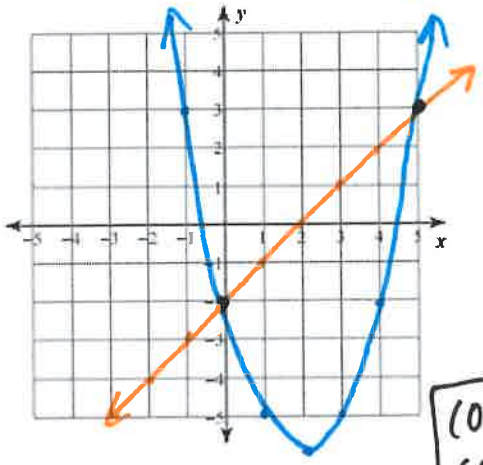
$2x + 1 = x^2 - 2$
$-2x \quad -1 \quad -2x \quad -1$
$0 = x^2 - 2x - 3$
$0 = (x - 3)(x + 1)$

$x - 3 = 0$ | $x + 1 = 0$
$x = 3$ | $x = -1$

$y = 2(3) + 1$ | $y = 2(-1) + 1$
$y = 6 + 1 = 7$ | $y = -2 + 1 = -1$

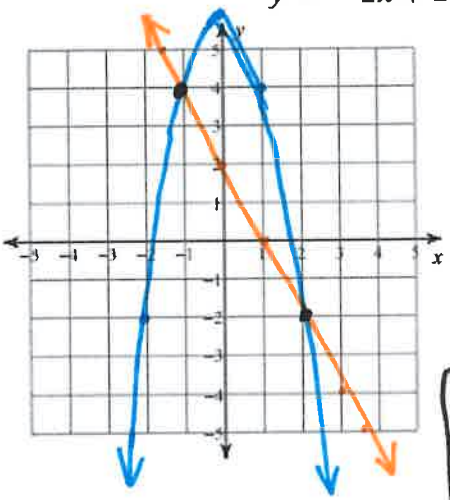
$(3, 7)$ and $(-1, -1)$

9. **Solve by Graphing** $y = x^2 - 4x - 2$ $y = x - 2$



(0, -2)
(5, 3)

10. **Solve by Graphing** $y = -2x^2 + 6$ $y = -2x + 2$



(-1, 4)
(2, -2)

Linear and Circle – Solve algebraically by Substitution.

11. $2x^2 + y^2 = 12$

$y = x$

$2x^2 + (x)^2 = 12$

$2x^2 + x^2 = 12$

$\frac{3x^2}{3} = \frac{12}{3}$

$x^2 = 4$

$x = \pm\sqrt{4}$

$x = \pm 2$

$x = 2$ → $y = 2$ $\quad$ $x = -2$ → $y = -2$

(2, 2)
(-2, -2)

12. $x^2 + y^2 = 160$

$y = 3x$

$x^2 + (3x)^2 = 160$

$x^2 + 9x^2 = 160$

$\frac{10x^2}{10} = \frac{160}{10}$

$x^2 = 16$

$x = \pm\sqrt{16}$

$x = \pm 4$

$x = 4$ → $y = (4)(3)$ $y = 12$ $\quad$ $x = -4$ → $y = 3(-4)$ $y = -12$

(4, 12)
(-4, -12)

13. $3x^2 + y^2 = 63$

$y = 2x$

$3x^2 + (2x)^2 = 63$

$3x^2 + 4x^2 = 63$

$\frac{7x^2}{7} = \frac{63}{7}$

$x^2 = 9$

$x = \pm\sqrt{9}$

$x = \pm 3$

$x = 3$ → $y = 2(3)$ $y = 6$ $\quad$ $x = -3$ → $y = 2(-3)$ $y = -6$

(3, 6)
(-3, -6)

14. **BONUS** $x^2 + y^2 = 1$

$y = x - 1$

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

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

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

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

$2x^2 - 2x = 0$

$2x(x-1) = 0$

$2x = 0$ $\quad$ $x - 1 = 0$

$x = 0$ $\quad$ $x = 1$

$y = 0 - 1 = -1$ $\quad$ $y = 1 - 1 = 0$

(0, -1)
(1, 0)

15. **BONUS** $x^2 + y^2 = 16$

$y = x + 4$

$x^2 + (x+4)^2 = 16$

$x^2 + (x+4)(x+4) = 16$

$x^2 + x^2 + 4x + 4x + 16 = 16$

$2x^2 + 8x + 16 = 16$

$2x^2 + 8x = 0$

$2x(x+4) = 0$

$2x = 0$ $\quad$ $x + 4 = 0$

$x = 0$ $\quad$ $x = -4$

$y = 0 + 4 = 4$ $\quad$ $y = -4 + 4 = 0$

(0, 4)
(-4, 0)