Day 2 – Solving Systems Using Substitution **Name:** _____

Practice Assignment **Date:** _____ **Block:** ____

a. **Review:** Solve the equation: x – 1 = 5x + 3x – 8

$x - 1 = 8x - 8$
$-8x \quad -8x$
$-7x - 1 = -8$
$+1 \quad +1$
$-7x = -7$
$\boxed{x = 1}$

b. **Review:** Put into slope intercept form: 4x – 5y = -20

$-4x \quad -4x$
$\frac{-5y}{-5} = \frac{-4x}{-5} - \frac{20}{-5}$
$\boxed{y = \frac{4}{5}x + 4}$

Directions: Solve each system using substitution. Write your solution as an ordered pair unless the system has no or infinite solutions.

1. $y = \boxed{x - 1}$
   $x + y = 3$

$x + (x - 1) = 3$
$2x - 1 = 3$
$+1 \quad +1$
$\frac{2x}{2} = \frac{4}{2}$
$x = \boxed{2}$

$y = (2) - 1$
$y = \boxed{1}$

Solution: $\boxed{(2, 1)}$

2. $4x + y = 0$
   $x = \boxed{-2y - 7}$

$4(-2y - 7) + y = 0$
$-8y - 28 + y = 0$
$-7y - 28 = 0$
$+28 \quad +28$
$-7y = 28$
$y = \boxed{-4}$

$x = -2(-4) - 7$
$x = 8 - 7$
$x = \boxed{1}$

Solution: $\boxed{(1, -4)}$

3. $x = \boxed{-5y + 4}$
   $3x + 15y = -1$

$3(-5y + 4) + 15y = -1$
$-15y + 12 + 15y = -1$
$12 = -1$
x – False

Solution: $\boxed{\text{no solutions}}$

4. $y = \boxed{x - 2}$
   $y = 4x + 3$

$-x - 2 = 4x + 3$
$-4x \quad -4x$
$-5x - 2 = 3$
$+2 \quad +2$
$\frac{-5x}{-5} = \frac{5}{-5}$
$x = -1$

$y = -(-1) - 2$
$y = 1 - 2$
$y = -1$

Solution: $\boxed{(-1, -1)}$

5. $x + y = 16$
$y = -x + 1$

$x + (-x + 1) = 16$
$x - x + 1 = 16$
$1 = 16$
False

Solution: no solutions

6. $y = 3x - 7$
$3x - y = 7$

$3x - (3x - 7) = 7$
$3x - 3x + 7 = 7$
$7 = 7$
true

Solution: infinite solutions

7. $y = -2x + 6$
$3x - y = 9$

$3x - (-2x + 6) = 9$
$3x + 2x - 6 = 9$
$5x - 6 = 9$
$+6 \quad +6$
$5x = 15$
$x = 3$

$y = -2(3) + 6$
$y = -6 + 6$
$y = 0$

Solution: $(3, 0)$

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

$-6x - 3 = -x + 2$
$+x \quad +x$
$-5x - 3 = 2$
$+3 \quad +3$
$-5x = 5$
$x = -1$

$y = -6(-1) - 3$
$y = 6 - 3$
$y = 3$

Solution: $(-1, 3)$

9. $y = -3x + 25$
$-x + 2y = -20$

$-x + 2(-3x + 25) = -20$
$-x - 6x + 50 = -20$
$-7x + 50 = -20$
$-50 \quad -50$
$-7x = -70$
$x = 10$

$y = -3(10) + 25$
$y = -30 + 25$
$y = -5$

Solution: $(10, -5)$

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

$(y - 4) + 2y = 2$
$y - 4 + 2y = 2$
$3y - 4 = 2$
$+4 \quad +4$
$3y = 6$
$y = 2$

$x = (2) - 4$
$x = -2$

Solution: $(-2, 2)$