Name: _____ **Hr:** _____

Systems with Substitution

Solve the systems of equations using substitution.

Think: What do I circle?
Where do I put it?

1. I.D. one variable that is by itself
   *circle the other side.
2. Send in substitute for x (or y)
   *put circled part into other equation for lone variable.
3. There should only be one variable now
   *solve for the variable that's left
4. Plug answer into an equation
   *find the other variable
5. ✓ the solution in **both** equations

1. $y = 4x + 6$
   $y = 2x$

$2x = 4x + 6$
$-4x \quad -4x$
$\frac{-2x}{-2} = \frac{6}{-2}$
$x = -3$
$y = 2(-3)$
$y = -6$

$-3, -6$

3. $y = 2x - 10$
   $y = 4x - 8$

$4x - 8 = 2x - 10$
$-2x \quad -2x$
$2x - 8 = -10$
$+8 \quad +8$
$2x = -2$
$x = -1$
$y = 2(-1) - 10$
$y = -2 - 10$
$y = -12$

$-1, -12$

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

$3x + 1 = 2x + 3$
$-2x \quad -2x$
$x + 1 = 3$
$x = 2$
$y = 2(2) + 3$
$y = 4 + 3$
$y = 7$

$2, 7$

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

$x + 6 = -2x - 3$
$+2x \quad +2x$
$3x + 6 = -3$
$-6 \quad -6$
$3x = -9$
$x = -3$
$y = -3 + 6$
$y = 3$

$-3, 3$

Name: _____ ID: A

5. $-2x+y=6$

$y=-4x-12$

$-2x+-4x-12=6$

$-6x-12=6$

$+12 \quad +12$

$-6x=18$

$x=-3$

$y=-4(-3)-12$

$y=12-12$

$y=0$

(-3, 0)

6. $3x+5y=10$

$y=x+2$

$3x+5(x+2)=10$

$3x+5x+10=10$

$8x+10=10$

$-10 \quad -10$

$8x=0$

$x=0$

$y=0+2$

$y=2$

(0, 2)

7. $3x+2y=7$

$y=-3x+11$

$3x+2(-3x+11)=7$

$3x+-6x+22=7$

$-3x+22=7$

$-22 \quad -22$

$-3x=-15$

$x=5$

$y=-3(5)+11$

$y=-15+11$

$y=-4$

(5, -4)

8. $3x+4y=11$

$y=2x$

$3x+4(2x)=11$

$3x+8x=11$

$11x=11$

$x=1$

$y=2(1)$

$y=2$

(1, 2)

9. $4x-y=10$

$y=2x+4$

$4x+-(2x+4)=10$

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

$2x+-4=10$

$+4 \quad +4$

$2x=14$

$x=7$

$y=2(7)+4$

$y=14+4$

$y=18$

(7, 18)