Kuta Software - Infinite Algebra 1 Name_____

Solving Systems of Equations by Substitution

Date_____ Period____

Solve each system by substitution.

1) $y = 6x - 11$
$-2x - 3y = -7$

2) $2x - 3y = -1$
$y = x - 1$

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

$y = (4) - 1$
$\boxed{y = 3}$
$(4, 3)$

3) $y = -3x + 5$
$5x - 4y = -3$

4) $-3x - 3y = 3$
$y = -5x - 17$

$-3x - 3(-5x - 17) = 3$
$-3x + 15x + 51 = 3$
$12x + 51 = 3$
$-51 \quad -51$
$12x = -48$
$\frac{12x}{12} = \frac{-48}{12}$
$\boxed{x = -4}$

$y = -5(-4) - 17$
$y = 20 - 17$
$\boxed{y = 3}$
$(-4, 3)$

5) $y = -2$
$4x - 3y = 18$

6) $y = 5x - 7$
$-3x - 2y = -12$

$-3x - 2(5x - 7) = -12$
$-3x - 10x + 14 = -12$
$-13x + 14 = -12$
$-14 \quad -14$
$-13x = -26$
$\frac{-13x}{-13} = \frac{-26}{-13}$
$\boxed{x = 2}$

$y = 5(2) - 7$
$y = 10 - 7$
$\boxed{y = 3}$
$(2, 3)$

7) $-4x + y = 6$
$-5x - y = 21$

8) $-7x - 2y = -13$
$x - 2y = 11$
$+2y \quad +2y$
$\boxed{x} = \boxed{2y + 11}$

$-7(2y + 11) - 2y = -13$
$-14y - 77 - 2y = -13$
$-16y - 77 = -13$
$+77 \quad +77$
$-16y = 64$
$\frac{-16y}{-16} = \frac{64}{-16}$
$\boxed{y = -4}$

$x = 2(-4) + 11$
$x = -8 + 11$
$\boxed{x = 3}$
$(3, -4)$

9) $-5x + y = -2$
$-3x + 6y = -12$

10) $-5x + y = -3$
$3x - 8y = 24$

$\boxed{y} = \boxed{5x - 3}$

$3x - 8(5x - 3) = 24$
$3x - 40x + 24 = 24$
$-24 \quad -24$
$-37x = 0$
$\frac{-37x}{-37} = \frac{0}{-37}$
$\boxed{x = 0}$

$y = 5(0) - 3$
$y = 0 - 3$
$\boxed{y = -3}$
$(0, -3)$

11) $x+3y=1$
$-3x-3y=-15$

12) $-3x-8y=20$
$-5x+y=19$
$+5x \quad +5x$
$y=5x+19$
$y=5(-4)+19$
$y=-20+19$
$y=-1$
$(-4,-1)$

$-3x-8(5x+19)=20$
$-3x-40x+152=20$
$-43x-152=20$
$+152 \quad +152$
$-43x=172$
$\frac{-43x}{-43}=\frac{172}{-43}$
$x=-4$

13) $-3x+3y=4$
$-x+y=3$

14) $-3x+3y=3$
$-5x+y=13$
$+5x \quad +5x$
$y=5x+13$
$y=5(-3)+13$
$y=-15+13$
$y=-2$
$(-3,-2)$

$-3x+3(5x+13)=3$
$-3x+15x+39=3$
$12x+39=3$
$-39 \quad -39$
$12x=-36$
$\frac{12x}{12}=\frac{-36}{12}$
$x=-3$

15) $6x+6y=-6$
$5x+y=-13$

16) $2x+y=20 \Rightarrow y=-2x+20$
$6x-5y=12$
$6x-5(-2x+20)=12$
$6x+10x-100=12$
$16x-100=12$
$+100 \quad +100$
$16x=112$
$\frac{16x}{16}=\frac{112}{16}$
$x=7$
$y=-2(7)+20$
$y=-14+20$
$y=6$
$(7,6)$

17) $-3x-4y=2$
$3x+3y=-3$

18) $-2x+6y=6 \Rightarrow -2x+6y=6$
$-7x+8y=-5$
$-6y \quad -6y$
$-7(3y-3)+8y=-5$
$-21y+21+8y=-5$
$-13y+21=-5$
$-21 \quad -21$
$-13y=-26$
$\frac{-13y}{-13}=\frac{-26}{-13}$
$y=2$

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

19) $-5x-8y=17$
$2x-7y=-17$

20) $-2x-y=-9 \Rightarrow -2x-y=-9$
$5x-2y=18$
$+2x \quad +2x$
$5x-2(-2x+9)=18$
$5x+4x-18=18$
$9x-18=18$
$+18 \quad +18$
$9x=36$
$\frac{9x}{9}=\frac{36}{9}$
$x=4$
$(4,1)$

$-y=2x-9$
$\frac{-y}{-1}=\frac{2x}{-1}-\frac{9}{-1}$
$y=-2x+9$
$y=-2(4)+9$
$y=-8+9$
$y=1$