(−4, −1)

* Show all your work! Check solutions!

Kuta Software - Infinite Algebra 1 Name (x, y)

Solving Systems of Equations by Substitution

Date _____ Period ____

Solve each system by substitution. ★ means multiple ways, work may differ.

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

$-2x - 3(6x - 11) = -7$
$-2x - 18x + 33 = -7$
$-20x = -40$
$x = 2$

$y = 6(2) - 11$
$y = 1$

(2, 1)

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

$2x - 3(x - 1) = -1$
$2x - 3x + 3 = -1$
$-1x = -4$
$x = 4$

$y = 4 - 1$
$y = 3$

(4, 3)

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

$5x - 4(-3x + 5) = -3$
$5x + 12x - 20 = 3$
$17x = 17$
$x = 1$

$y = -3(1) + 5$
$y = 2$

(1, 2)

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

$-3x - 3(-5x - 17) = 3$
$-3x + 15x + 51 = 3$
$12x = -48$
$x = -4$

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

(−4, 3)

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

$4x - 3(-2) = 18$
$4x + 6 = 18$
$4x = 12$
$x = 3$

(3, −2)

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

$-3x - 2(5x - 7) = -12$
$-3x - 10x + 14 = -12$
$-13x = -26$
$x = 2$

$y = 5(2) - 7$
$y = 3$

(2, 3)

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

$-5x - (4x + 6) = 21$
$-9x - 6 = 21$
$-9x = 27$
$x = -3$

$y = 4(-3) + 6$
$y = -6$

(−3, −6)

8) $-7x - 2y = -13$
$x - 2y = 11$ $x = (2y + 11)$

$-7(2y + 11) - 2y = -13$
$-14y - 77 - 2y = -13$
$-16y = 64$
$y = -4$

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

(3, −4)

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

$-3x + 6(5x - 2) = -12$
$-3x + 30x - 12 = -12$
$27x = 0$
$x = 0$

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

(0, −2)

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

$3x - 8(5x - 3) = 24$
$3x - 40x + 24 = 24$
$-37x = 0$
$x = 0$

$y = 5(0) - 3$
$y = -3$

(0, −3)

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

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

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

$(7,-2)$

12) $-3x-8y=20$
$-5x+y=19$ $y=(5x+19)$

$-3x-8(5x+19)=20$
$-3x-40x-152=20$
$-43x=172$
$x=-4$

$y=5(-4)+19$
$y=-1$

$(-4,-1)$

★ 13) $-3x+3y=4$
$-x+y=3$ $y=(x+3)$

$-3x+3(x+3)=4$
$-3x+3x+9=4$
$9=4$

No Solution
$\emptyset$

14) $-3x+3y=3$
$-5x+y=13$ $y=(5x+13)$

$-3x+3(5x+13)=3$
$-3x+15x+39=3$
$12x=-36$
$x=-3$

$y=5(-3)+13$
$y=-2$

$(-3,-2)$

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

$6x+6(-5x-13)=-6$
$6x-30x-78=-6$
$-24x=72$
$x=-3$

$y=-5(-3)-13$
$y=2$

$(-3,2)$

16) $2x+y=20$ $y=(-2x+20)$
$6x-5y=12$

$6x-5(-2x+20)=12$
$6x+10x-100=12$
$16x=112$
$x=7$

$y=-2(7)+20$
$y=6$

$(7,6)$

★ 17) $-3x-4y=2$
$3x+3y=-3 \div 3$
$x+y=-1 \rightarrow x=(-y-1)$

$-3(-y-1)-4y=2$
$3y+3-4y=2$
$-1y=-1$
$y=1$

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

$(-2,1)$

★ 18) $-2x+6y=6 \div 2$ $-x+3y=3 \rightarrow x=(3y-3)$
$-7x+8y=-5$

$-7(3y-3)+8y=-5$
$-21y+21+8y=-5$
$-13y=-26$
$y=2$

$x=3(2)-3$
$x=6-3$
$x=3$

$(3,2)$

★ 19) $-5x-8y=17$
$2x-7y=-17 \div 2$
$x-3.5y=-8.5 \rightarrow x=(3.5y-8.5)$

$-5(3.5y-8.5)-8y=17$
$-17.5y+42.5-8y=17$
$-25.5y=-25.5$
$y=1$

$x=3.5(1)-8.5$
$x=-5$

$(-5,1)$

20) $-2x-y=-9$ $(2x+9)=y$
$5x-2y=18$

$5x-2(-2x+9)=18$
$5x+4x-18=18$
$9x=36$
$x=4$

$-2(4)+9=y$
$1=y$

$(4,1)$