

# Write Solutions as ordered pairs (x,y)

Solve each system by substitution.

## Set Equal

1)  $y = 6x - 18$   
 $y = -8x + 24$

$$6x - 18 = -8x + 24$$

$$+8x \quad +8x$$

$$14x - 18 = 24$$

$$+18 \quad +18$$

$$14x = 42$$

$$x = 3$$

$y = 6(3) - 18$   
 $y = 0$

**(3,0)**

2)  $y = 4x - 7$   
 $y = 2x - 3$

$$4x - 7 = 2x - 3$$

$$-2x \quad -2x$$

$$2x - 7 = -3$$

$$+7 \quad +7$$

$$2x = 4$$

$$x = 2$$

$y = 4(2) - 7$   
 $y = 1$

**(2,1)**

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

$$-3x - 4 = -2x - 2$$

$$+2x \quad +2x$$

$$-x - 4 = -2$$

$$+4 \quad +4$$

$$-x = 2$$

$$x = -2$$

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

**(-2,2)**

3)  $y = 4x + 3$   
 $y = -8x - 21$

$$4x + 3 = -8x - 21$$

$$+8x \quad +8x$$

$$12x + 3 = -21$$

$$-3 \quad -3$$

$$12x = -24$$

$$x = -2$$

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

**(-2,-5)**

6)  $3x + 6y = 15$   
 $y = -3x + 15$

$$3x + 6(-3x + 15) = 15$$

$$3x - 18x + 90 = 15$$

$$-15x + 90 = 15$$

$$-15x = 75$$

$$x = 5$$

$y = -3(5) + 15$   
 $y = 0$

**(5,0)**

8)  $y = 4x + 4$   
 $-5x + 6y = 24$

$$-5x + 6(4x + 4) = 24$$

$$-5x - 24x + 24 = 24$$

$$-29x = 0$$

$$x = 0$$

$y = 4(0) + 4$   
 $y = 4$

**(0,4)**

## Substitute

5)  $y = -5x + 13$   
 $-7x + 2y = 9$

$$-7x + 2(-5x + 13) = 9$$

$$-7x - 10x + 26 = 9$$

$$-17x + 26 = 9$$

$$-17x = -17$$

$$x = 1$$

$y = -5(1) + 13$   
 $y = 8$

**(1,8)**

7)  $y = -5x + 3$   
 $-x - y = 1$

$$-x - (-5x + 3) = 1$$

$$-x + 5x - 3 = 1$$

$$4x - 3 = 1$$

$$4x = 4$$

$$x = 1$$

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

**(1,-2)**

## Solve for a variable then substitute

9)  $-2x - y = -10$   
 $x - 4y = 5$

$$-2(4y + 5) - y = -10$$

$$-8y - 10 - y = -10$$

$$-9y = 0$$

$$y = 0$$

$x = 4(0) + 5$   
 $x = 5$

**(5,0)**

11)  $-x - 2y = -5$   
 $x + 8y = 23$

$$-(-8y + 23) - 2y = -5$$

$$8y - 23 - 2y = -5$$

$$6y = 18$$

$$y = 3$$

$x = -8(3) + 23$   
 $x = -1$

**(-1,3)**

12)  $5x + 5y = 0$   
 $-x + y = 16$

$$5x + 5(x + 16) = 0$$

$$5x + 5x + 80 = 0$$

$$10x = -80$$

$$x = -8$$

$y = -8 + 16$   
 $y = 8$

**(-8,8)**

10)  $-5x + y = -3$   
 $-8x + 3y = -9$

$$-8x + 3(-5x - 3) = -9$$

$$-8x - 15x - 9 = -9$$

$$-23x = 0$$

$$x = 0$$

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

**(0,-3)**

## MORE DIFFICULT SOLVE FOR A VARIABLE, SUB

13)  $-6x - 4y = 10$   
 $5x + 2y = -7$

$$5x + 2(-\frac{3}{2}x - \frac{5}{2}) = -7$$

$$5x - 3x - 5 = -7$$

$$2x - 5 = -7$$

$$2x = -2$$

$$x = -1$$

**(-1,-1)**

15)  $6x - 8y = -6$   
 $-6x + 6y = 12$

$$-6x + 6(\frac{3}{4}x + \frac{3}{4}) = 12$$

$$-6x + \frac{18}{4}x + \frac{18}{4} = 12$$

$-\frac{2}{3} \cdot -\frac{3}{2}x = \frac{15}{2} \cdot -\frac{2}{3}$   
 $x = -5$

**(-5,-3)**

14)  $-2x + 5y = 4$   
 $-5x + 6y = -3$

$$-5x + 6(\frac{2}{5}x + \frac{4}{5}) = -3$$

$$-5x + \frac{12}{5}x + \frac{24}{5} = -3$$

$$-\frac{13}{5}x = -\frac{39}{5}$$

$$x = 3$$

$y = \frac{2}{5}(3) + \frac{4}{5} = 2$

**(3,2)**

16)  $4x - 6y = 8$   
 $-2x + 2y = -8$

$$4x - 6(x - 4) = 8$$

$$4x - 6x + 24 = 8$$

$$-2x = -16$$

$$x = 8$$

$y = 8 - 4$   
 $y = 4$

**(8,4)**

Back Side is hook!

Use calculator for fraction