

Solving Systems of Equations by Substitution

Solve each system by substitution.

HOMEWORK
SOLUTIONS

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

$y = 6x - 11$ $-2x - 3y = -7$
 $y = 6(2) - 11$ $-2x - 3(6x - 11) = -7$
 $y = 1$ $-2x - 18x + 33 = -7$
 $-20x = -40$
 $x = 2$

2) $2x - 3y = -1$ (4, 3)
 $y = x - 1$

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

3) $y = -3x + 5$ (1, 2)
 $5x - 4y = -3$

$y = -3x + 5$ $5x - 4(-3x + 5) = -3$
 $y = -3(1) + 5$ $5x + 12x - 20 = -3$
 $= -3 + 5$ $17x - 20 = -3$
 $= 2$ $17x = 17$
 $x = 1$

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

$-3x - 3y = 3$ $y = -5x - 17$
 $-3x - 3(-5x - 17) = 3$
 $-3x + 15x + 51 = 3$ $x = -4$
 $12x + 51 = 3$ $y = -5(-4) - 17$
 $12x = -48$ $y = 20 - 17$
 $x = -4$ $y = 3$

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

they gave you "y"
 $4x - 3(-2) = 18$
 $4x + 6 = 18$
 $4x = 12$
 $x = 3$

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

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

7) $-4x + y = 6$ (-3, -6)
 $-5x - y = 21$

$-4x + y = 6$ $-5x - y = 21$
 $y = 6 + 4x$ $-5x - (6 + 4x) = 21$
 $y = 6 + 4(-3)$ $-5x - 6 - 4x = 21$
 $y = 6 - 12$ $-6 - 9x = 21$
 $y = -6$ $-9x = 27$
 $x = -3$

8) $-7x - 2y = -13$ (3, -4)
 $x - 2y = 11$

$-7x - 2y = -13$ $x - 2y = 11$
 $-7(11 + 2y) - 2y = -13$ $x = 11 + 2y$
 $-77 - 14y - 2y = -13$ $x = 11 + 2(-4)$
 $-77 - 16y = -13$ $x = 11 - 8$
 $-16y = 64$ $y = -4$ $x = 3$

9) $-5x + y = -2$ (0, -2)
 $-3x + 6y = -12$

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

10) $-5x + y = -3$ (0, -3)
 $3x - 8y = 24$

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