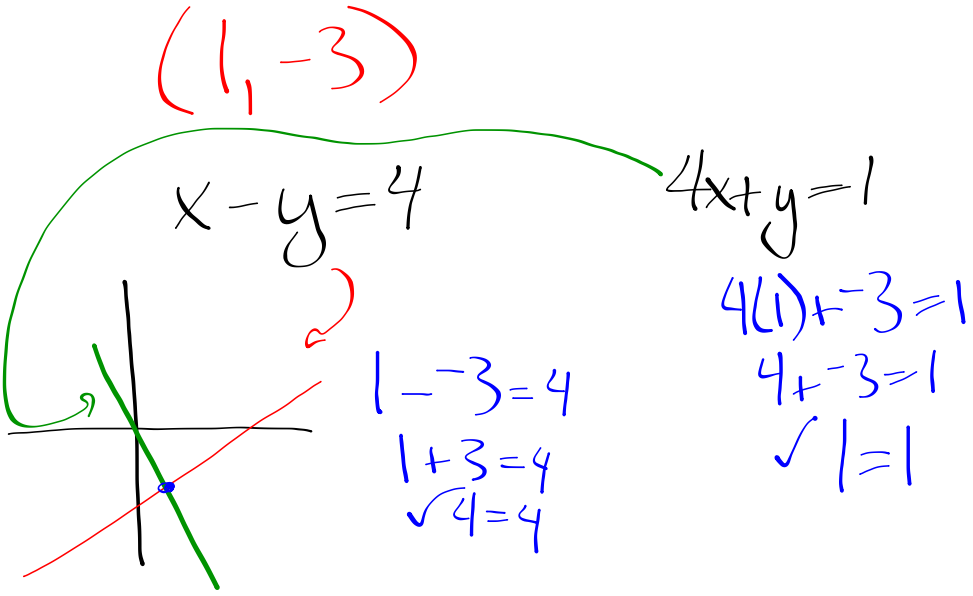
Homework Review (7.1):



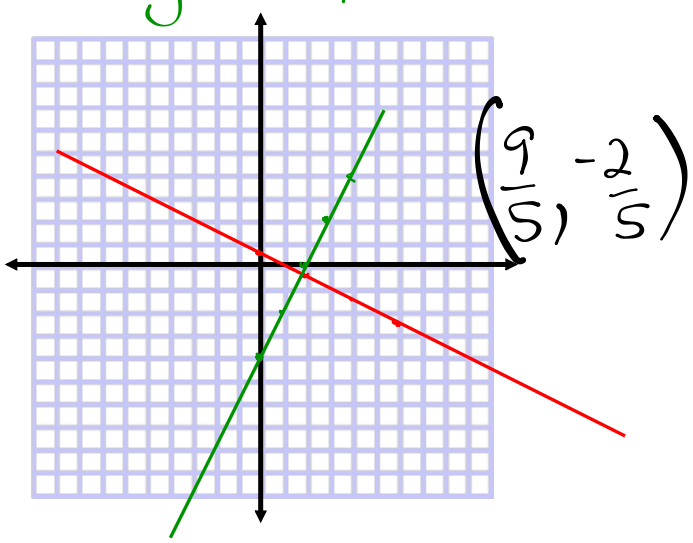
(16) $x+2y=1$ $\quad -x \quad -x$

$\frac{2y}{2} = \frac{-x+1}{2}$

$y = -\frac{1}{2}x + \frac{1}{2}$

$-2x+y=-4$ $\quad +2x \quad +2x$

$y = 2x-4$



$\left(\frac{9}{5}, \frac{-2}{5}\right)$

(1) $x+2y=1$

$-x \quad -x$

$\frac{2y}{2} = \frac{-x+1}{2}$

$y = -\frac{1}{2}x + \frac{1}{2}$

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

$2\left(-2x + -\frac{1}{2}x + \frac{1}{2}\right) = (-4)2$

$-4x + -x + 1 = -8$

$-5x+1 = -8$

$-1 \quad -1$

$\frac{-5x}{-5} = \frac{-9}{-5}$

$x = \frac{9}{5}$ $\quad \left(\frac{9}{5}, \frac{-2}{5}\right)$

(3) $x+2y=1$

$\frac{9}{5} + 2y = 1$

$-\frac{9}{5} \quad -\frac{9}{5}$

$1 - \frac{9}{5}$

$\frac{5}{5} - \frac{9}{5} =$

$-\frac{4}{5}$

$\frac{2y}{2} = \frac{-\frac{4}{5}}{2}$

$y = -\frac{2}{5}$

$\frac{-4}{5} \div 2$

$-\frac{4}{5} \cdot \frac{1}{2} = -\frac{2}{5}$

$4x + 3y = 27$
$-2x + y = 14$

$+2x \quad +2x$

$y = 2x + 14$

1. Solve one equation for EITHER x or y

2. Substitute the resulting expression for the variable you just solved for - in the other equation

$4x + 3(2x + 14) = 27$
$4x + 6x + 42 = 27$
$10x + 42 = 27$
$-42 \quad -42$
$\frac{10x}{10} = \frac{-15}{10}$
$x = -\frac{3}{2}$

3. Substitute the numerical value of the variable you just found into either equation and solve for the other variable

$-2x + y = 14$
$+2\left(+\frac{3}{2}\right) + y = 14$
$3 + y = 14$
$-3 \quad -3$
$y = 11$

$\left(-\frac{3}{2}, 11\right)$

4. Check your work - does the point satisfy both equations?

$4\left(-\frac{3}{2}\right) + 3(11) = 27$
$\frac{-12}{2} + 33 = 27$
$-6 + 33 = +27$
$\checkmark \; 27 = 27$

$-2\left(-\frac{3}{2}\right) + 11 = 14$
$\frac{6}{2} + 11 = 14$
$3 + 11 = 14$
$14 = 14 \checkmark$

Example:

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

Step 1: Solve either equation for either variable

Step 2: Substitute into the other equation & solve

Step 3: Substitute the variable into either equation / solve

Step 4: Check the point in both equations

Step 1:

$x - 2y = -6$

$-x \quad\quad -x$

$\frac{-2y}{-2} = \frac{-x - 6}{-2}$

$y = \frac{1}{2}x + 3$

Step 2:

$4x + 6\left(\frac{1}{2}x + 3\right) = 4$

$4x + 3x + 18 = 4$

$7x + 18 = 4$

$-18 \quad -18$

$\frac{7x}{7} = \frac{-14}{7}$

$x = -2$

Step 3:

$-2 - 2y = -6$

$+2 \quad\quad +2$

$\frac{-2y}{-2} = \frac{-4}{-2}$

$y = 2$

Step 4:

$x - 2y = -6$

$-2 - 2(2) = -6$

$-2 - 4 = -6$

$\checkmark\ -6 = -6$

$4x + 6y = 4$

$4(-2) + 6(2) = 4$

$-8 + 12 = 4$

$\checkmark\ 4 = 4$

$-2, 2$

Solve the linear system by using substitution.

7. $x = 6 - 4y$
$2x - 3y = 1$

(2,1)

① $x = 6 - 4y$

② $2x - 3y = 1$
$2(6-4y) - 3y = 1$
$12 - 8y - 3y = 1$
$12 - 11y = 1$
$-12 \quad -12$
$\frac{-11y}{-11} = \frac{-11}{-11}$
$y = 1$

③ $x = 6 - 4y$
$x = 6 - 4(1)$
$x = 6 - 4$
$x = 2$

④ (2,1)

$x = 6 - 4y$
$2 = 6 - 4(1)$
$2 = 6 - 4$
$2 = 2$ ✓

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

8. $4x + 3y = 0$
$2x + y = -2$

(4,-1)

9. $-x + 2y = -6$
$8x + y = 31$

① $-x + 2y = -6$
$-2y \quad -2y$
$-1(-x) = (-2y - 6) - 1$
$x = 2y + 6$

② $8(2y+6) + y = 31$
$16y + 48 + y = 31$
$17y + 48 = 31$
$-48 \quad -48$
$\frac{17y}{17} = \frac{-17}{17}$
$y = -1$

③ $-x + 2y = -6$
$-x + 2(-1) = -6$
$-x - 2 = -6$
$+2 \quad +2$
$-1(-x) = (-4) - 1$
$x = 4$

④ (4,-1)

$-x + 2y = -6$
$-4 + 2(-1) = -6$
$-4 + -2 = -6$
$-6 = -6$ ✓

$8x + y = 31$
$8(4) + -1 = 31$
$32 - 1 = 31$
$31 = 31$ ✓

Drum Sticks A drummer is stocking up on drum sticks and brushes. The wood sticks that he buys are $10.50 a pair and the brushes are $24 a pair. He ends up spending $90 on sticks and brushes and buys two times as many pairs of sticks as brushes. How many pairs of sticks and brushes did he buy?

Homework:

p. 439 4-26 (even), 31