

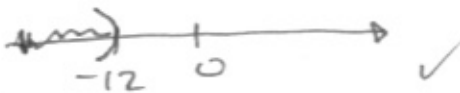
East Los Angeles College
Department of Mathematics
Math 115
Test 2

Solutions

Solve and Graph the following.

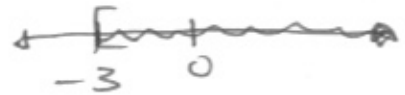
1) $x - 8 < -20$

$$\begin{array}{r} +8 \quad +8 \\ x < -12 \end{array} \quad \checkmark$$



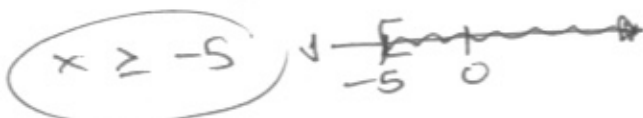
2) $3x - 5 \geq -14$

$$\begin{array}{r} +5 \quad +5 \\ 3x \geq -9 \\ \frac{3x}{3} \geq \frac{-9}{3} \\ x \geq -3 \end{array} \quad \checkmark$$



3) $4x - 8 \leq 6x + 2$

$$\begin{array}{r} +8 \quad +8 \\ 4x \leq 6x + 10 \\ -6x \quad -6x \\ -2x \leq 10 \\ \frac{-2x}{-2} \geq \frac{10}{-2} \end{array} \quad \checkmark$$



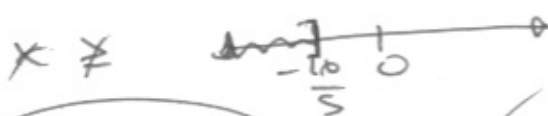
4) $3(x - 5) - 7 > 2$

$$\begin{array}{r} 3x - 15 - 7 > 2 \\ 3x - 22 > 2 \\ +22 \quad +22 \\ 3x > 24 \\ \frac{3x}{3} > \frac{24}{3} \end{array} \quad \checkmark$$



5) $-4x - 9 \geq x + 7$

$$\begin{array}{r} -x \quad -x \\ -5x - 9 \geq 7 \\ +9 \quad +9 \\ -5x \geq 16 \\ \frac{-5x}{-5} \leq \frac{16}{-5} \end{array} \quad \checkmark$$



6) $-\frac{3}{5}x > -\frac{9}{10}$

$$\begin{array}{r} (-\frac{5}{3}) \left(-\frac{3}{5}x \right) > -\frac{9}{10} \left(-\frac{5}{3} \right) \\ x < \frac{3 \cdot 8}{10 \cdot 3} \\ x < \frac{24}{30} \\ x < \frac{4}{5} \end{array} \quad \checkmark$$



Use interval notation to describe the solutions set for the following.

7) $x < 3$

$(-\infty, 3)$ ✓

8) $x \leq -1$

$(-\infty, -1]$ ✓

9) $x > 0$

$(0, \infty)$ ✓

10) $x \leq 5$

$(-\infty, 5]$ ✓

11) $x > -2$

$(-2, \infty)$ ✓

12) $x \geq 6$

$[6, \infty)$ ✓

Solve for the indicated variable.

13) $p = 2l + 2w$ for l
 $-2w \quad -2w$

$$\frac{p - 2w}{2} = \frac{2l}{2}$$

$$\frac{p - 2w}{2} = l ; \quad \checkmark$$

$$\boxed{l = \frac{p - 2w}{2}}$$

14) $F = \frac{9}{5}C + 32$ for C
 $-32 \quad -32$

$$F - 32 = \frac{9}{5}C$$

$$\frac{5}{9}(F - 32) = \frac{5}{9} \cdot \frac{9}{5} \cdot C$$

$$\frac{5}{9}(F - 32) = C ;$$

$$\boxed{C = \frac{5}{9}(F - 32)} \quad \checkmark$$

$$15) \frac{F = ma}{m} \text{ for } a$$

$$\left(a = \frac{F}{m} \right)$$

✓

$$16) A = \frac{1}{2}bh \text{ for } b$$

$$\frac{2}{h}A = \frac{1}{2}(\cancel{b}) \cdot \frac{2}{\cancel{h}}$$

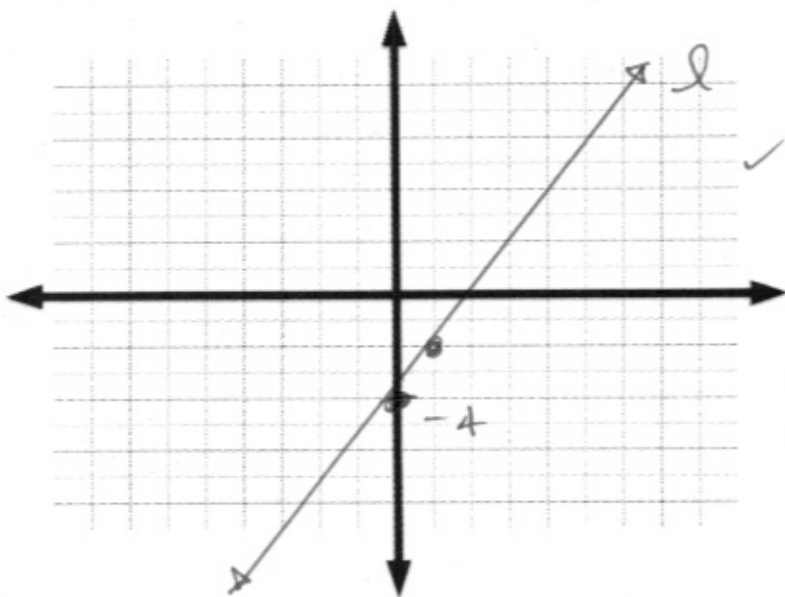
$$\frac{2A}{h} = b ; \left(b = \frac{2A}{h} \right)$$

✓

Graph the following linear equations.

$$17) 2x - y = 4 ; y = 2x - 4 ; b = -4 \checkmark$$

$$m = \frac{2}{1} \checkmark$$



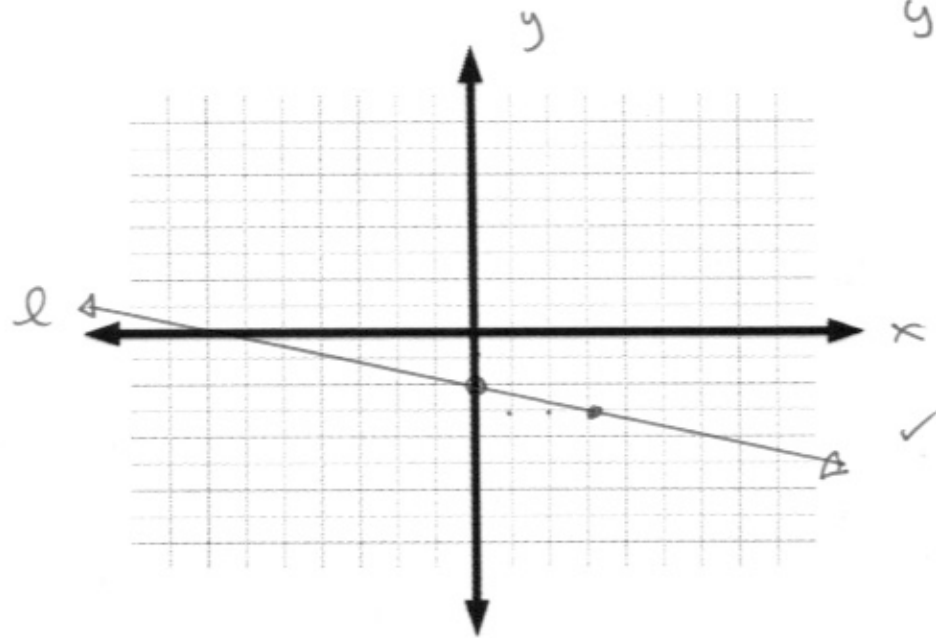
✓

18) $x+3y=-6$; $\frac{x}{3} = \frac{-x-6}{3}$; $y = -\frac{x}{3} - \frac{6}{3}$

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

$m = -\frac{1}{3}$ ✓

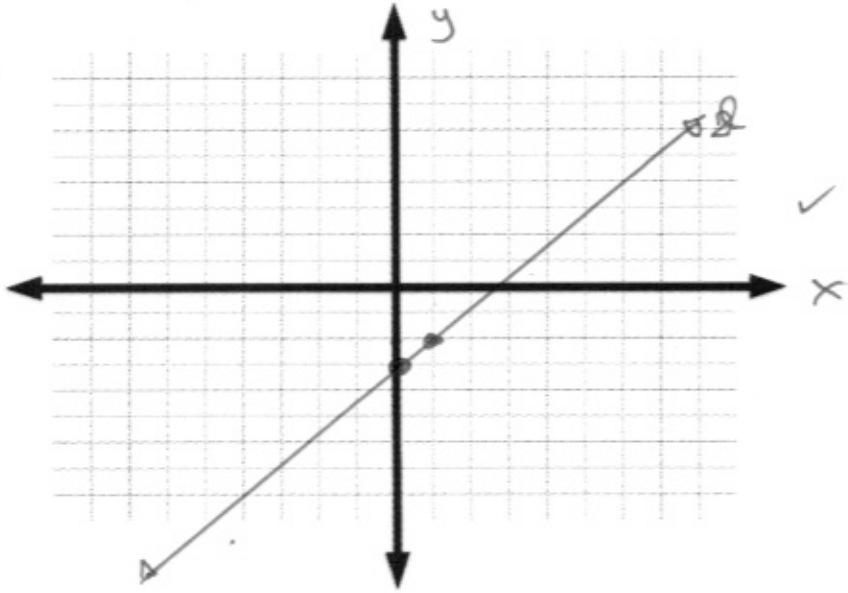
$b = -2$



19) $x-y=3$; $x-3=y$; $y = x-3$

$m = 1$ ✓

$b = -3$ ✓

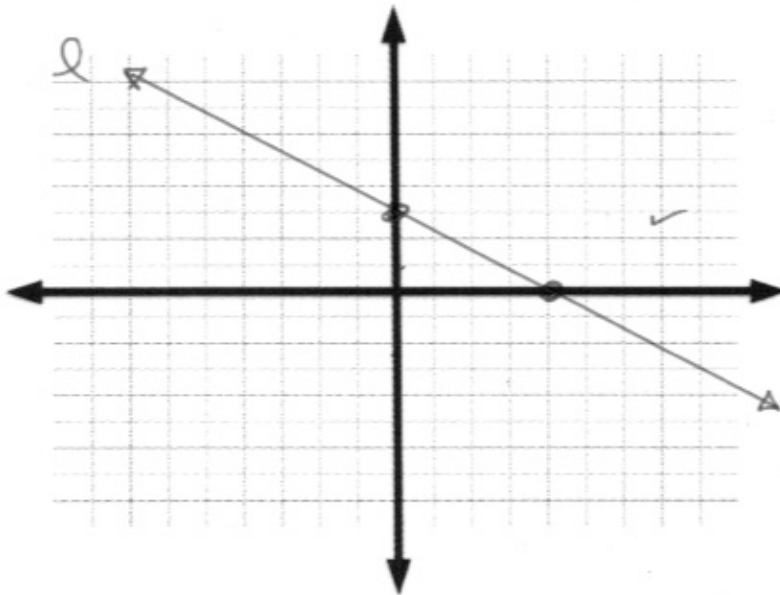


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20) $3x + 4y = 12$

$$\frac{4y}{4} = \frac{-3x + 12}{4}$$

$$y = -\frac{3}{4}x + \frac{12}{4}$$



$$y = -\frac{3}{4}x + 3$$

$$m = -\frac{3}{4}$$

$$b = 3$$

Determine the equation of the line that:

21) Passes through the point $(4, -1)$ with slope $-\frac{1}{2}m$

$$y - y_1 = m(x - x_1)$$

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

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

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

22) Passes through the points $(1, -2)$ and $(4, 1)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{1 - (-2)}{4 - 1}$$

$$m = 1$$

$$m = \frac{1 - (-2)}{4 - 1}$$

$$y - y_1 = m(x - x_1)$$

$$y - (-2) = 1 \cdot (x - 1)$$

$$y + 2 = x - 1$$

$$y = x - 3$$

7v

23) Passes through the point $(0, -5)$ and is parallel to the equation $2x + y = 3$; $y = -2x + 3$

$$y - y_1 = m(x - x_1)$$

$\begin{matrix} x & y \\ (0, -5) & \\ -5 & -2 \\ & 0 \end{matrix}$

$$m = -2$$

$$y + 5 = -2x$$

$\begin{matrix} -5 & -5 \end{matrix}$

$$y = -2x - 5$$

24) Passes through the point $(1, 2)$ and is perpendicular to the equation $3x + y = -4$; $y = -3x - 4$

$$y - y_1 = m(x - x_1)$$

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

$$y - 2 = \frac{1}{3}(x - 1)$$

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

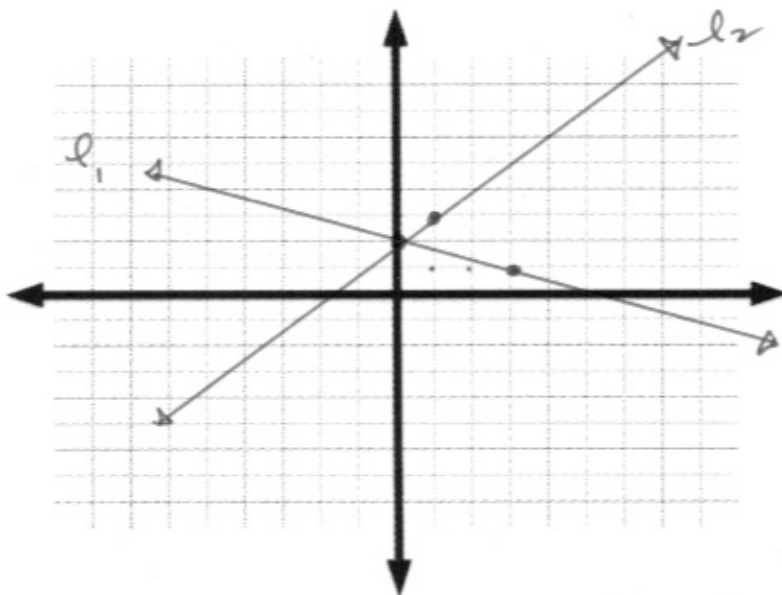
$\begin{matrix} +2 & +2 \end{matrix}$

$$y = \frac{1}{3}x + \frac{5}{3}$$

25) Solve the linear system by graphing.

$$l_1 \quad x + 3y = 6$$

$$l_2 \quad x - y = -2$$



$$(0, 2)$$

✓ ✓

$$(l_1) \quad x + 3y = 6$$

$$\frac{3y}{3} = \frac{-x + 6}{3}$$

$$y = -\frac{1}{3}x + \frac{6}{3}$$

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

$$(l_2) \quad x - y = -2$$

$$x + 2 = y$$

$$y = x + 2$$

6 ✓