

MAC1105 College Algebra  
2.3 Practice Problems

1. Find the slope of the line passing through each pair of points.

a. (5,8) and (7,-12)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-12 - 8}{7 - 5}$$

$$= \frac{-20}{2} = -10$$

b. (8,-3) and (7,-3)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - (-3)}{7 - 8}$$

$$= \frac{-3 + 3}{-1} = \frac{0}{-1} = 0$$

2. Find an equation of the line that has a y-intercept of (0,8) and has a slope of  $m = -\frac{3}{5}$ .

$$y = mx + b$$

$$y = -\frac{3}{5}x + 8$$

3. Write the point-slope form of the equation of a line with slope 3 that passes through the point (5,-1). Then write the equation in slope intercept form and standard form.

point-slope form  $y - y_1 = m(x - x_1)$

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

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

$$y + 1 = 3x - 15$$

$$y = 3x - 16 \leftarrow \text{slope-int form}$$

$$-3x - 3x$$

$$-3x + y = -16$$

$$3x - y = 16 \leftarrow \text{standard form}$$

4. Write the point-slope form of the equation of the line passing through the points (2,3) and (7,4). Then write the equation in slope intercept form and standard form.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 3}{7 - 2} = \frac{1}{5}$$

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

$$y - 3 = \frac{1}{5}(x - 2) \leftarrow \text{point slope form}$$

$$y - 3 = \frac{1}{5}x - \frac{2}{5}$$

$$+3 \quad +3$$

$$y = \frac{1}{5}x + \frac{13}{5} \leftarrow \text{slope int form}$$

$$y = \frac{1}{5}x + \frac{13}{5}$$

$$5y = 5\left(\frac{1}{5}x + \frac{13}{5}\right)$$

$$5y = x + 13$$

$$-x -x$$

$$-x + 5y = 13$$

$$x - 5y = -13 \leftarrow \text{standard form}$$

5. Identify the slope and y-intercept.

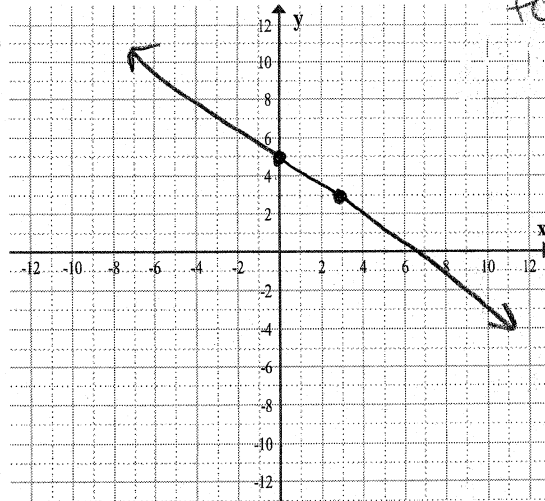
Graph the linear equation using the slope

and y-intercept.  $y = -\frac{2}{3}x + 5$

$$m = -\frac{2}{3} \quad y\text{-int } (0,5)$$

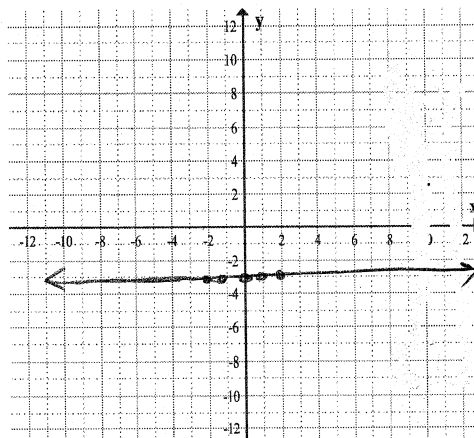
plot (0,5)

$$\text{use } m = \frac{-2}{3} = \frac{\text{Rise}}{\text{Run}}$$



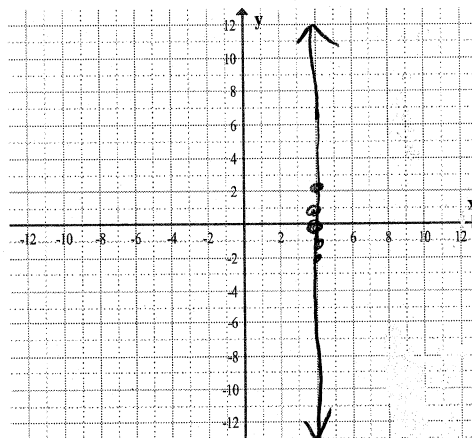
6. Graph the linear function.  $y = -3$ .

x	y
-2	-3
-1	-3
0	-3
1	-3
2	-3



7. Graph the linear equation.  $x = 4$ .

x	y
4	-2
4	-1
4	0
4	1
4	2



8. Find the slope and y-intercept of a line whose equation is  $3x + 5y - 10 = 0$ .

$$3x + 5y - 10 = 0$$

$$5y = -3x + 10$$

$$\frac{5y}{5} = \frac{-3x + 10}{5}$$

$$y = -\frac{3}{5}x + 2$$

$$m = \text{slope} = -\frac{3}{5}$$

$$y\text{-int} (0, 2)$$

9. Graph the linear equation using intercepts.

$$4x - 5y = 20$$

$$x\text{-int } y = 0$$

$$y\text{-int } x = 0$$

$$4x - 5(0) = 20$$

$$4(0) - 5y = 20$$

$$\frac{4x}{4} = \frac{20}{4}$$

$$\frac{-5y}{-5} = \frac{20}{-5}$$

$$x = 5$$

$$y = -4$$

$$(5, 0)$$

$$(0, -4)$$

