

Name: _____

Chapter 6 Practice Test

Equation of a line:

Slope – Intercept Form: $y = mx + b$

Slope – Point Form: $y - y_1 = m(x - x_1)$

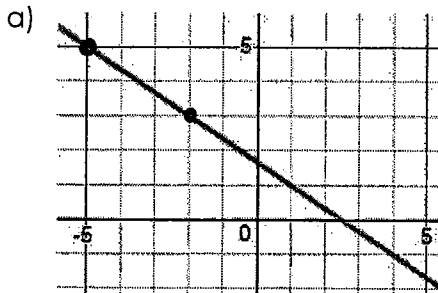
General Form: $Ax + By + C = 0$

Slope of a line:

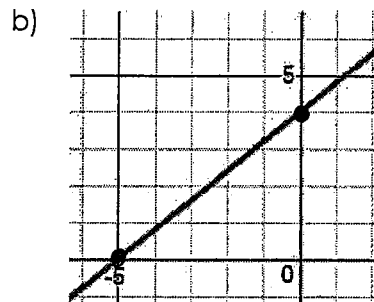
$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

Show all your work for each question. Simplify fractions whenever necessary.

1. Find the **slope** of each line.



$$m = -\frac{2}{3}$$



$$m = \frac{4}{5}$$

2. Find the **slope** of the line that passes through the following points:

a) $A(-6, 8)$ et $B(-1, -2)$

b) $C(-3, 7)$ et $D(5, -5)$

$$m = \frac{-2 - 8}{-1 - (-6)} = \frac{-10}{5} = -2$$

$$m = \frac{-5 - 7}{5 - (-3)} = \frac{-12}{8} = -\frac{3}{2}$$

3. Determine if the following lines are **parallel**, **perpendicular**, or **neither**. **Justify** your response.

a) $J(-3, 3)$ & $K(-1, 7)$ and $L(-1, 2)$ & $M(5, -1)$

$$m_{JK} = \frac{7 - 3}{-1 - (-3)} = \frac{4}{2} = 2$$

$$m_{LM} = \frac{-1 - 2}{5 - (-1)} = \frac{-3}{6} = -\frac{1}{2}$$

perpendicular

slopes are negative
reciprocals

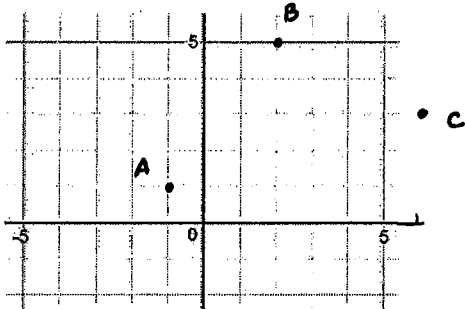
b) $P(-4, -2)$ & $Q(-1, 7)$ and $R(2, 5)$ & $S(4, -1)$

$$m_{PQ} = \frac{7 - (-2)}{-1 - (-4)} = \frac{9}{3} = 3$$

$$m_{RS} = \frac{-1 - 5}{4 - 2} = \frac{-6}{2} = -3$$

neither

4. The vertices of triangle ABC are $A(-1, 1)$, $B(2, 5)$, and $C(6, 3)$. Is triangle ABC a right triangle? Justify your response.



$$m_{AB} = \frac{4}{3}$$

$$m_{BC} = \frac{-2}{4} = -\frac{1}{2}$$

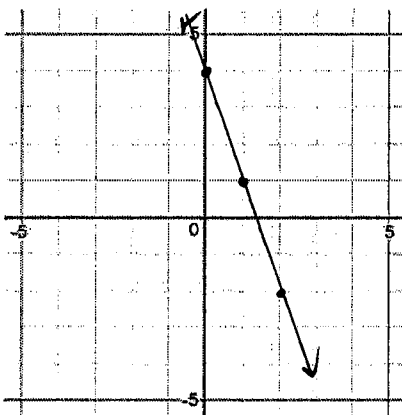
ABC is not a right triangle because AB and BC are not perpendicular to each other (90° is not formed)

5. Graph each linear function. Indicate the slope and the y -intercept of each one.

a) $y = -3x + 4$

slope: -3

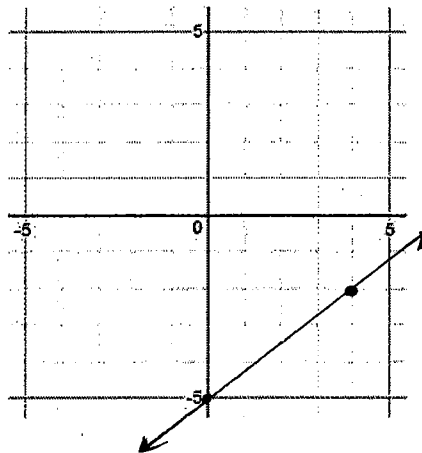
y -intercept: 4



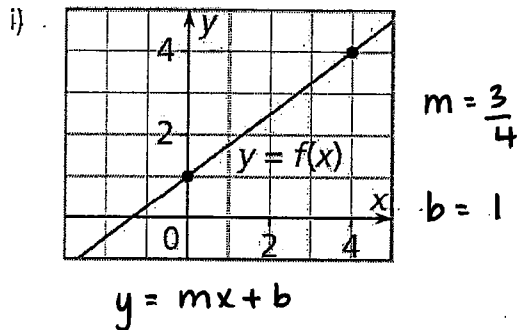
b) $y = \frac{3}{4}x - 5$

slope: 3/4

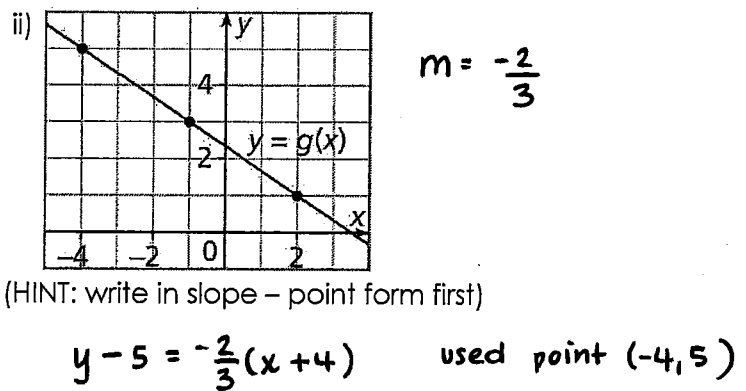
y -intercept: -5



6. a) Write the corresponding equation in **slope - intercept form** for each graph.



$y = \frac{3}{4}x + 1$



$y - 5 = -\frac{2}{3}x - \frac{8}{3}$
 $+5 \qquad +5$

$y = -\frac{2}{3}x - \frac{8}{3} + \frac{15}{3} \Rightarrow y = -\frac{2}{3}x + \frac{7}{3}$

b) Write each equation from (a) in **general form**.

(i) $4(y = \frac{3}{4}x + 1)$

$4y = 3x + 4$
 $-4y \quad -4y$

$0 = 3x - 4y + 4$

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

$3y = -2x + 7$
 $+2x - 7 \quad +2x \quad -7$

$2x + 3y - 7 = 0$

7. Write the equation of a line that passes through point $A(-2, 3)$ and is **perpendicular** to $y = 2x + 1$.

a) **slope - point form**

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

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

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

b) **slope - intercept form**

$\hookrightarrow m_{\perp} = -\frac{1}{2}$

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

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

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

8. Write the equation of a line that passes through point $E(-4, -3)$ and is **parallel** to $y + 1 = \frac{5}{7}(x - 4)$.

a) **slope - point form**

$y - (-3) = \frac{5}{7}(x - (-4))$

$y + 3 = \frac{5}{7}(x + 4)$

b) **general form**

\hookrightarrow same slope $m = \frac{5}{7}$

$7[y + 3 = \frac{5}{7}(x + 4)]$

$7(y + 3) = 5[x + 4]$

$7(y + 3) = 5(x + 4)$

$7y + 21 = 5x + 20$

$-7y - 21 \quad -7y - 21$

$0 = 5x - 7y - 1$

9. Write the equation of a line in **slope - intercept form** and **general form** for a line with an x -intercept of -3 and a y -intercept of 5 .

x -int. $(-3, 0)$ y -int. $(0, 5)$

find m $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 0}{0 - (-3)} = \frac{5}{3}$

slope-intercept form: $y = mx + b$

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

general form: $Ax + By + C = 0$

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

$3y = 5x + 15$

$-3y$ $-3y$

$0 = 5x - 3y + 15$

10. For each linear function:

i) $y + 4 = 2(x + 3) \rightarrow y - (-4) = 2(x - (-3))$ ii) $y - 1 = -\frac{1}{3}(x - 4)$

a) Identify the **slope** and a **point** that the line passes through

slope: 2

slope: $-\frac{1}{3}$

point: $(-3, -4)$

point: $(4, 1)$

b) Write each equation in **slope - intercept form**.

(i) $y + 4 = 2(x + 3)$

(ii) $y - 1 = -\frac{1}{3}(x - 4)$

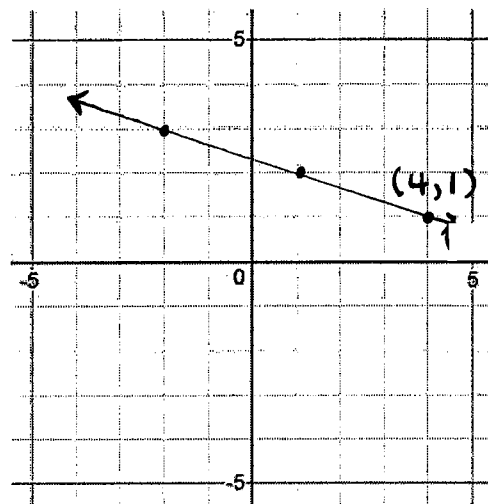
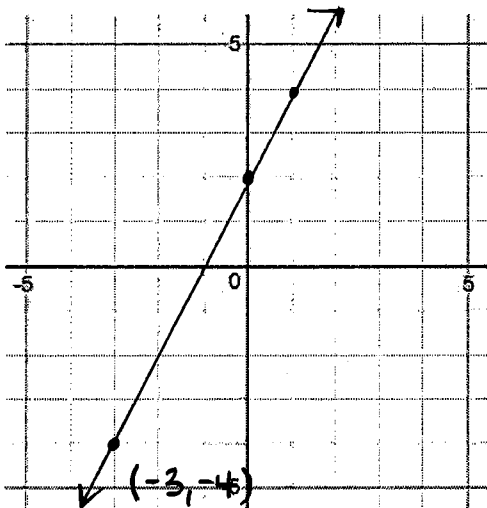
$y + 4 = 2x + 6$
 -4 -4

$y - 1 = -\frac{1}{3}x + \frac{4}{3}$
 $+1$ $+1$

$y = 2x + 2$

$y = -\frac{1}{3}x + \frac{4}{3} + \frac{3}{3} \Rightarrow y = -\frac{1}{3}x + \frac{7}{3}$

c) **Graph** each linear function



graph.
point $(4, 1)$
not y -int.

11. Write each equation in **general form**.

$$a) \left(y = \frac{1}{5}x + 3 \right)$$

$$5y = x + 15$$

$$-5y \quad -5y$$

$$0 = x - 5y + 15$$

$$c) \left[y - 2 = \frac{1}{3}(x + 4) \right]$$

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

$$3y - 6 = x + 4$$

$$-3y + 6 \quad -3y + 6$$

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

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

$$x + 4y = 8$$

$$-8 \quad -8$$

$$x + 4y - 8 = 0$$

$$d) \left[y + 1 = -\frac{4}{5}(x - 2) \right]$$

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

$$5y + 5 = -4x + 8$$

$$+4x - 8 \quad +4x - 8$$

$$4x + 5y - 3 = 0$$

12. **Graph** each linear function. (HINT: Rewrite the equation in slope - intercept form first.)

$$a) 2x - 4y - 8 = 0$$

$$-2x \quad +8 \quad -2x + 8$$

$$\frac{-4y}{-4} = \frac{-2x + 8}{-4}$$

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

$$b) x - 3y + 12 = 0$$

$$-x \quad -12 \quad -x - 12$$

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

$$y = \frac{1}{3}x + 4$$

