

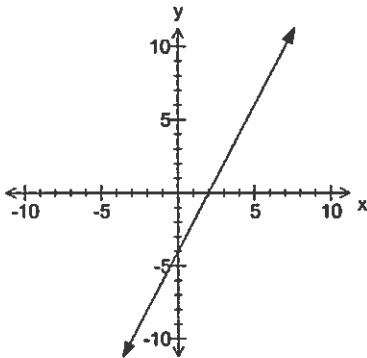
Math 1201 Final Exam Review

Linear Functions

1. What is the slope of the line given by: $y = \frac{2}{3}x - 3$?

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

2. What is the equation of the graph below in slope-intercept form?



$m = \frac{4}{2} = 2$

$b = -4$

$y = 2x - 4$

3. What is the y-intercept of the line $y = 5 - 3x$?

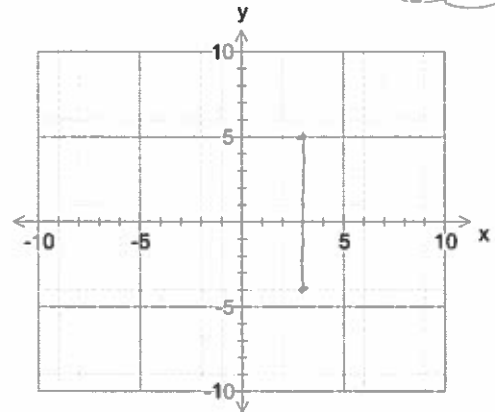
$b = 5$

4. What is the equation of the line with slope -3 and y-intercept 7 in slope-intercept form?

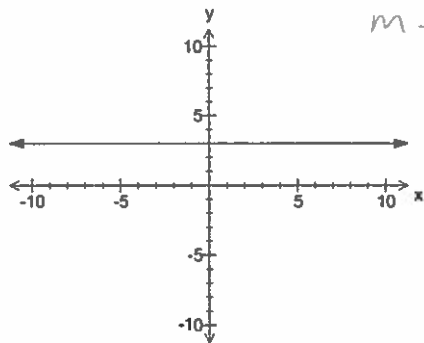
$y = -3x + 7$

5. What is the slope of the line segment joining points A(3,-4) and B(3,5)? Use the graph below to aid you in your answer.

$m = \frac{\text{rise}}{\text{run}} = \frac{9}{0} = \text{undefined}$



6. What is the slope of the line graphed below?

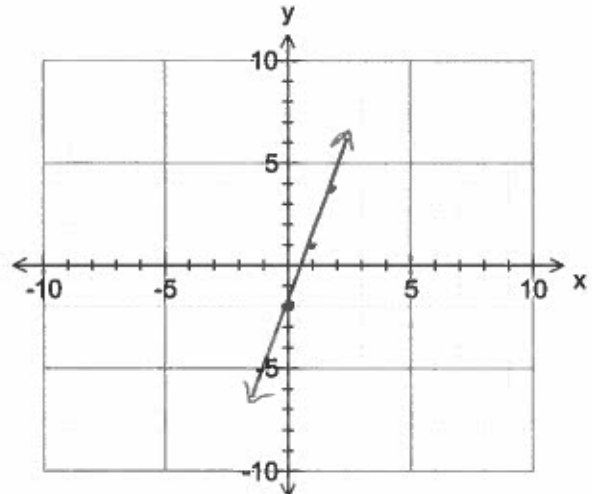


$m = 0$

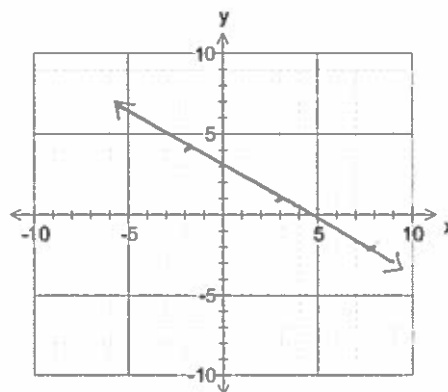
7. Graph the line. State the slope and y-intercept.

$y = 3x - 2$

$m = \frac{3}{1}$ $b = -2$



8. Draw the line through point A(-2, 4) with slope $-\frac{3}{5}$.



9. Line AB passes through A(-3, 2) and B(3, 0).
Line CD passes through C(1, -1) and D(4, -2).
Are lines AB and CD parallel? Show your work.

$$\begin{aligned}
 m_{AB} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{0 - 2}{3 - (-3)} \\
 &= \frac{-2}{6} \\
 &= -\frac{1}{3}
 \end{aligned}$$

$$\begin{aligned}
 m_{CD} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{-2 - (-1)}{4 - 1} \\
 &= \frac{-1}{3}
 \end{aligned}$$

$\overline{AB} \parallel \overline{CD}$
Same slopes
 \therefore lines are
 \parallel .

10. A quadrilateral has vertices A(0, 4), B(6, 6), C(8, 3), and D(2, 1). Is quadrilateral ABCD a parallelogram?

$$\begin{aligned}
 m_{AB} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{6 - 4}{6 - 0} \\
 &= \frac{2}{6} \\
 &= \frac{1}{3}
 \end{aligned}$$

$$\begin{aligned}
 m_{BC} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{3 - 6}{8 - 6} \\
 &= \frac{-3}{2}
 \end{aligned}$$

$$\begin{aligned}
 m_{CD} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{1 - 3}{2 - 8} \\
 &= \frac{-2}{-6} \\
 &= \frac{1}{3}
 \end{aligned}$$

$$\begin{aligned}
 m_{AD} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{1 - 4}{2 - 0} \\
 &= \frac{-3}{2}
 \end{aligned}$$

yes ABCD is a
parallelogram
- opposite sides
have same
slopes so
opposite sides
are parallel.

11. Triangle ABC has vertices A(-3, 7), B(-1, 5) and C(-5, 2). Is ABC a right triangle?

$$\begin{aligned}
 m_{AB} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{5 - 7}{-1 - (-3)} \\
 &= \frac{-2}{2} \\
 &= -1
 \end{aligned}$$

$$\begin{aligned}
 m_{BC} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{2 - 5}{-5 - (-1)} \\
 &= \frac{-3}{-4} \\
 &= \frac{3}{4}
 \end{aligned}$$

$$\begin{aligned}
 m_{AC} &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{2 - 7}{-5 - (-3)} \\
 &= \frac{-5}{-2} \\
 &= \frac{5}{2}
 \end{aligned}$$

no, ABC is not a
right triangle. No
pair of sides are
negative reciprocals
so they are not
perpendicular
(90°)

12. What are the slope and point which formed the equation $y + 1 = 3(x - 2)$?

$$m = 3$$

$$P(2, -1)$$

13. Write the slope-point form of the equation of the line passing through point $A(-2, 4)$ with slope $m = -5$.

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

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

14. Find the slope of the equation $6x + 4y - 5 = 0$

$$\begin{array}{r} -6x \qquad -6x \\ \hline 4y - 5 = -6x + 5 \\ +5 \qquad +5 \\ \hline 4y = -6x + 5 \\ \hline 4y = -6x + 5 \\ 4 \qquad \qquad \qquad 4 \\ \hline y = -\frac{6}{4}x + \frac{5}{4} \\ m = -\frac{3}{2} \end{array}$$

15. Find the x and y intercepts of the equation $3x - 4y - 24 = 0$.

x-int

$$3x - 4(0) - 24 = 0$$

$$3x - 24 = 0$$

$$\frac{3x}{3} = \frac{24}{3}$$

$$x = 8$$

$$(8, 0)$$

y-int

$$3(0) - 4y - 24 = 0$$

$$-4y = 24$$

$$y = -6$$

$$(0, -6)$$

16. Write the equations in general form:

A) $y = 2x - 1$

$$2x - y - 1 = 0$$

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

$$3y = -x + 12$$

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

C) $y + 1 = -\frac{2}{5}(x - 2)$

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

$$5y + 5 = -2x + 4$$

$$2x + 5y + 1 = 0$$

17. Write the equation in slope-intercept form.

$$\begin{array}{r} 3x + 4y - 16 = 0 \\ -3x \qquad +16 \qquad -3x + 16 \\ \hline 4y = -3x + 16 \\ \hline 4y = -3x + 16 \\ 4 \qquad \qquad \qquad 4 \\ \hline y = -\frac{3}{4}x + 4 \end{array}$$

