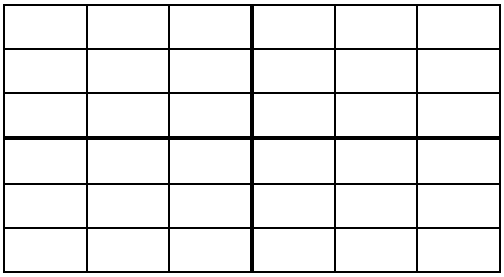
Math 0302, Practice Test 2: Linear Equations in Two Variables

#1 Graph the ordered pair (0,–1) on the Cartesian plane below.



#2 Find the slope of a line passing through (0,3) and (–2,0).

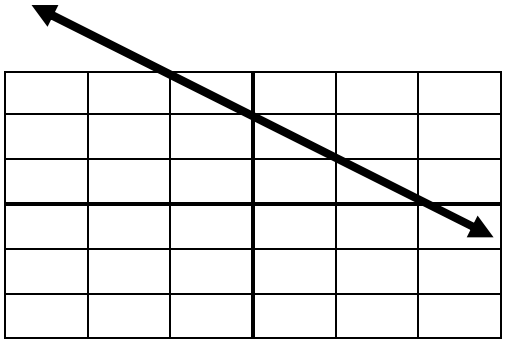
#3 Find the equation of a line passing through the points (–5,24) and (–1,4).

#4 Find the equation of a line passing through (–3,–1) with a slope equal to –2.

#5 Write $19x + 3y = 6$ in slope-intercept form. (Hint: Get y by itself.)

#6 Is the ordered pair (–4, –9) a solution to the linear equation: $y = {}^{3}/_{4}x - 6$?

#7 Identify the *y*-intercept of the line graphed below. Assume the intercept is an integer.



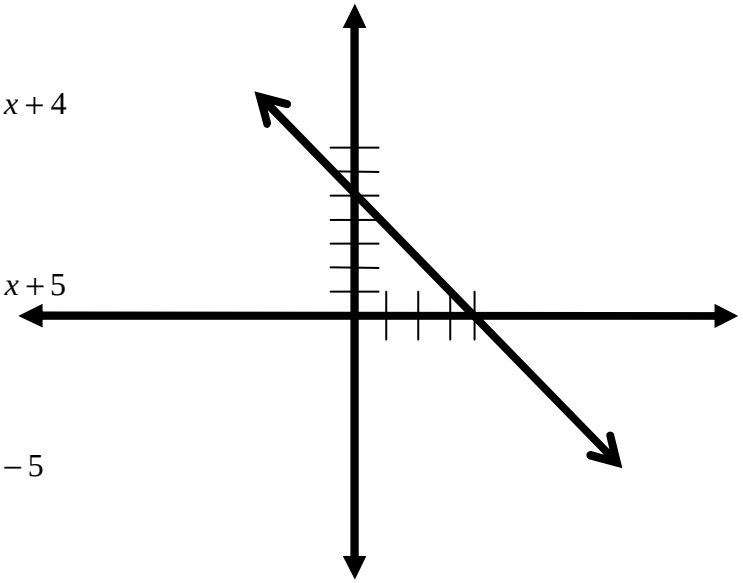
#8 Match the graph below to the matching linear equation. Assume all intercepts are integers.

A) $y = -\frac{4}{5}x + 4$

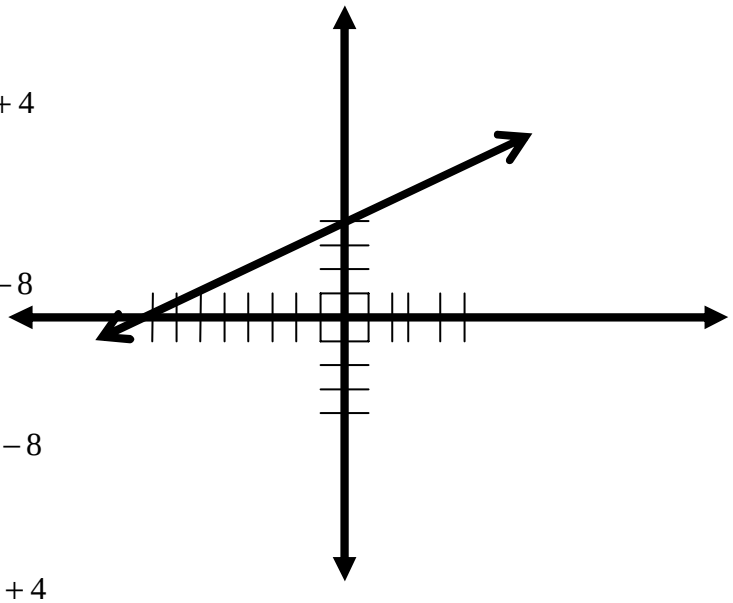
B) $y = -\frac{5}{4}x + 5$

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

D) $y = \frac{4}{5}x + 4$



#9 Match the graph below to the matching linear equation. Assume all intercepts are integers.



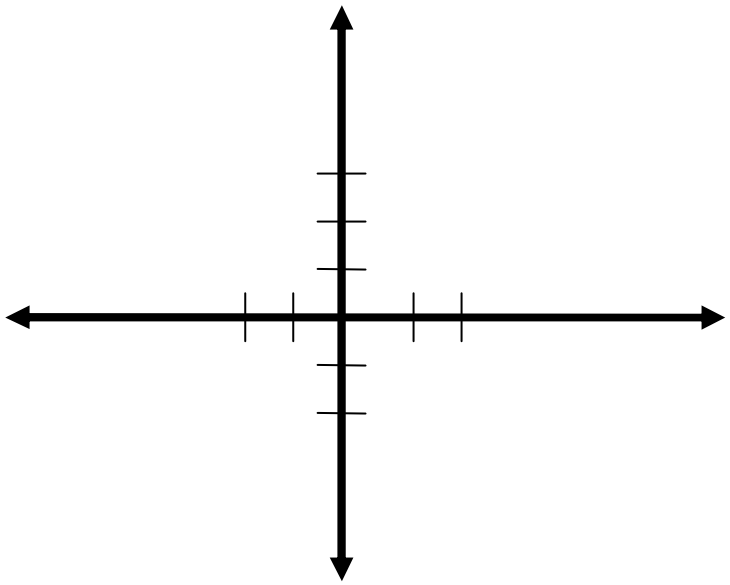
A) $y = \frac{1}{2}x + 4$

B) $y = \frac{1}{2}x - 8$

C) $y = -2x - 8$

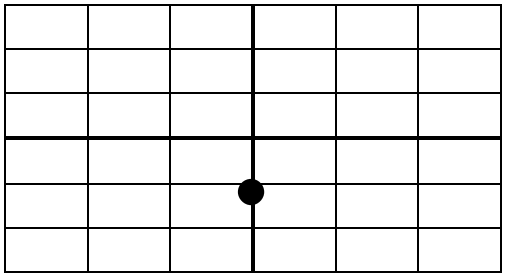
D) $y = -2x + 4$

#10 Sketch a graph of $y = -2x + 2$.



SOLUTIONS

#1 Graph the ordered pair (0,–1) on the Cartesian plane below.



#2 Find the slope of a line passing through (0,3) and (–2,0).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0-3}{-2-0} = \frac{-3}{-2} = \frac{3}{2}$$

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

#3 Find the equation of a line passing through the points (–5,24) and (–1,4).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-24}{-1-(-5)} = \frac{-20}{-1+5} = \frac{-20}{4} = -5$$

$$y = mx + b$$
$$24 = -5(-5) + b$$
$$24 = 25 + b$$
$$24 - 25 = b$$
$$-1 = b$$

$$\boxed{y = -5x - 1}$$

#4 Find the equation of a line passing through (–3,–1) with a slope equal to –2.

$$y = mx + b$$
$$-1 = -2(-3) + b$$
$$-1 = 6 + b$$
$$-1 - 6 = b$$
$$-7 = b$$

$$\boxed{y = -2x - 7}$$

#5 Write $19x + 3y = 6$ in slope-intercept form. (Hint: Get y by itself.)

$$3y = -19x + 6$$
$$\frac{3y}{3} = \frac{-19x}{3} + \frac{6}{3}$$
$$y = -\frac{19}{3}x + 2$$

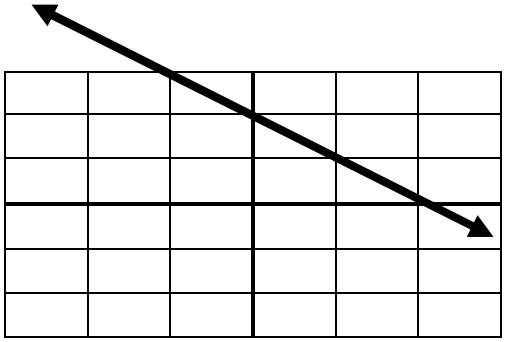
$$\boxed{y = -\frac{19}{3}x + 2}$$

#6 Is the ordered pair (–4, –9) a solution to the linear equation: $y = {}^3/_4x - 6$?

$$y = \frac{3}{4}x - 6$$
$$-9 = \frac{3}{4}(-4) - 6$$
$$-9 = -3 - 6$$
$$-9 = -9$$

Yes, (–4, –9) is a solution to the equation $y = {}^3/_4x - 6$.

#7 Identify the *y*-intercept of the line graphed below. Assume the intercept is an integer.



The *y*-intercept is the point where the graph intersects the *y*-axis. In this graph, the *y*-intercept is (0,2).

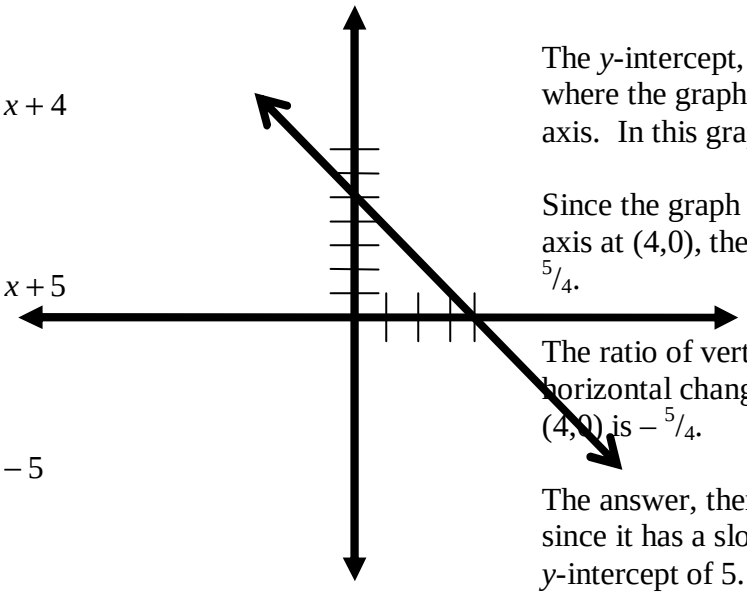
#8 Match the graph below to the matching linear equation. Assume all intercepts are integers.

A) $y = -\frac{4}{5}x + 4$

B) $y = -\frac{5}{4}x + 5$

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

D) $y = \frac{4}{5}x + 4$



The *y*-intercept, *b*, is the point where the graph intersects the *y*-axis. In this graph, $b = 5$.

Since the graph intersects the *x*-axis at (4,0), the slope equals $-{}^5/_4$.

The ratio of vertical change to horizontal change from (0,5) to (4,0) is $-{}^5/_4$.

The answer, therefore, is choice B since it has a slope of $-{}^5/_4$ and a *y*-intercept of 5.

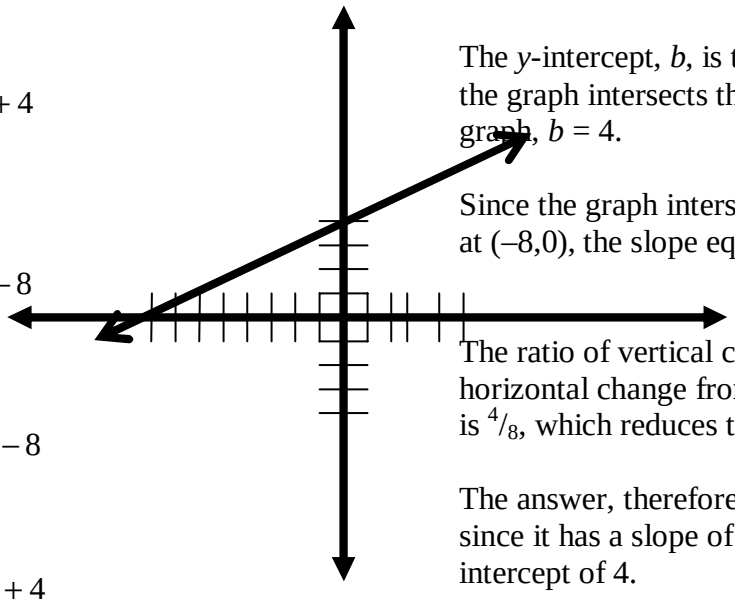
#9 Match the graph below to the matching linear equation. Assume all intercepts are integers.

A) $y = \frac{1}{2}x + 4$

B) $y = \frac{1}{2}x - 8$

C) $y = -2x - 8$

D) $y = -2x + 4$



The *y*-intercept, *b*, is the point where the graph intersects the *y*-axis. In this graph, $b = 4$.

Since the graph intersects the *x*-axis at (–8,0), the slope equals $^1/_2$.

The ratio of vertical change to horizontal change from (0,4) to (–8,0) is $^4/_8$, which reduces to $^1/_2$.

The answer, therefore, is choice A since it has a slope of $^1/_2$ and a *y*-intercept of 4.

#10 Sketch a graph of $y = -2x + 2$.

The graph should intersect the y-axis at (0,2) because b = 2, so place a point at (0,2).

Since the slope equals –2, go down two and to the right one from (0,3) and place a point at (1,0).

Connect the points to draw the line.