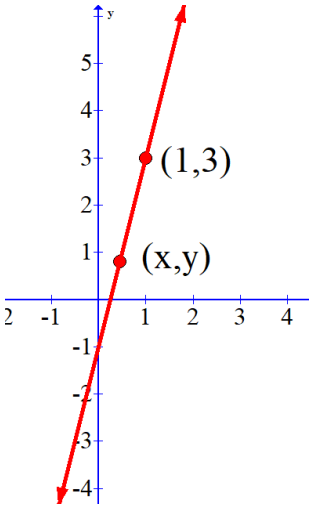
Finding an Equation of a Line Practice

Use the following information to answer the first question.



1. When determining the equation for the line above, a math student correctly began by writing $4 = \frac{y-3}{x-1}$. The slope of this line is

A) 1 B) 3 C) 4 D) -4

Use the following information to answer the next question.

Tony's teacher asked him to determine the equation of the line having a slope of $-\frac{1}{2}$ and passing through the point (4, -8).

His work is shown below.

Step 1	$-\frac{1}{2} = \frac{y-4}{x-(-8)}$
Step 2	-1(x + 8) = 2(y – 4)
Step 3	-x – 8 = 2y - 8
Step 4	$-\frac{1}{2}x = y$

2. Tony made an error in step

A) 1 B) 2 C) 3 D) 4

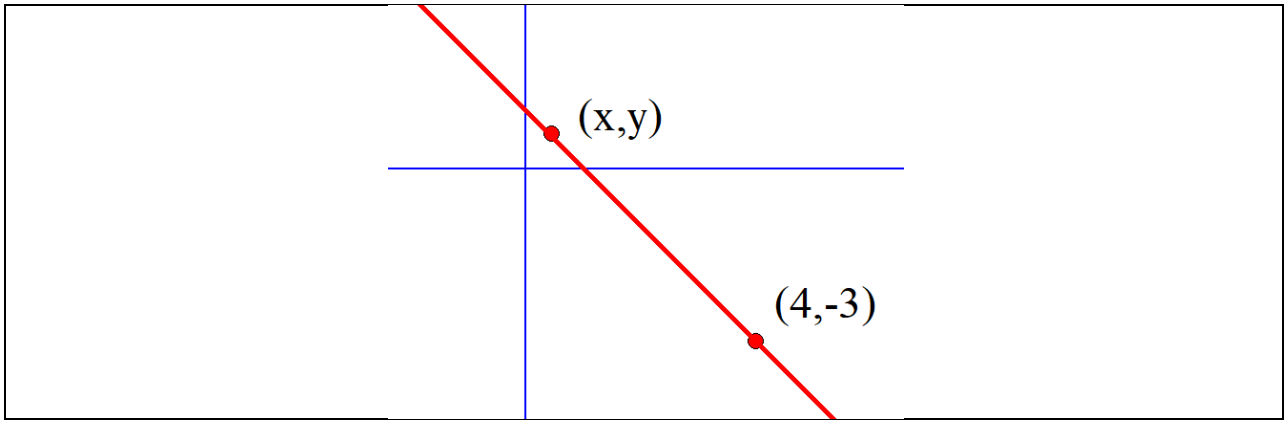
Use the following information to answer the next question.

A math student was asked to determine the equation for the line passing through the points (-2, -2) and (1, 5).

3. In slope-intercept form, the equation is

A) $y = \frac{7}{3}x + \frac{8}{3}$ B) $y = -\frac{7}{3}x + \frac{22}{3}$ C) $y = \frac{7}{3}x + \frac{22}{3}$ D) $y = -\frac{7}{3}x + \frac{8}{3}$

Use the graph below to answer the next question.



4. If the slope of the line above is -1, determine the equation of the line.

5. The points (6,4) and (0, y) lie on a line that has a slope of $\frac{2}{3}$. Which statement is true?

A) The equation is $y = \frac{2}{3}x$ and the value of y is 2.

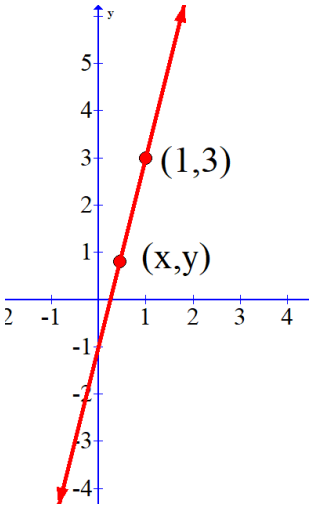
B) The equation is $y = \frac{2}{3}x$ and the value of y is 0.

C) The equation is $y = \frac{6}{4}x$ and the value of y is 2.

D) The equation is $y = \frac{6}{4}x$ and the value of y is 0.

Finding an Equation of a Line PracticeSolutions

Use the following information to answer the first question.



1. When determining the equation for the line above, a math student correctly began by writing $4 = \frac{y-3}{x-1}$. The slope of this line is

   A) 1 B) 3 C) 4 D) -4

Solution

Since slope = $\frac{rise}{run}$, it would be appropriate to begin writing $4 = \frac{y-3}{x-1}$. Therefore, the slope is 4.

Use the following information to answer the next question.

Tony's teacher asked him to determine the equation of the line having a slope of $-\frac{1}{2}$ and passing through the point (4, -8).

His work is shown below.

Step 1	$-\frac{1}{2} = \frac{y-4}{x-(-8)}$
Step 2	-1(x + 8) = 2(y – 4)
Step 3	-x – 8 = 2y - 8
Step 4	$-\frac{1}{2}x = y$

2. Tony made an error in step

A) 1 B) 2 C) 3 D) 4

Solution

The error is in step one. Tony mixed up the x and y-coordinates. It should be

The correct answer is A.

Use the following information to answer the next question.

A math student was asked to determine the equation for the line passing through the points (-2, -2) and (1, 5).

3. In slope-intercept form, the equation is

A) $y = \frac{7}{3}x + \frac{8}{3}$ B) $y = -\frac{7}{3}x + \frac{22}{3}$ C) $y = \frac{7}{3}x + \frac{22}{3}$ D) $y = -\frac{7}{3}x + \frac{8}{3}$

Solution

The first step is to use the two points to determine the slope.

$$slope = \frac{5-(-2)}{1-(-2)}$$

$$slope = \frac{7}{3}$$

The second step is to use one of the points, and the slope, to determine the equation of the line.

$$\frac{7}{3} = \frac{y-5}{x-1}$$

Cross multiply.

7(x – 1) = 3(y – 5)

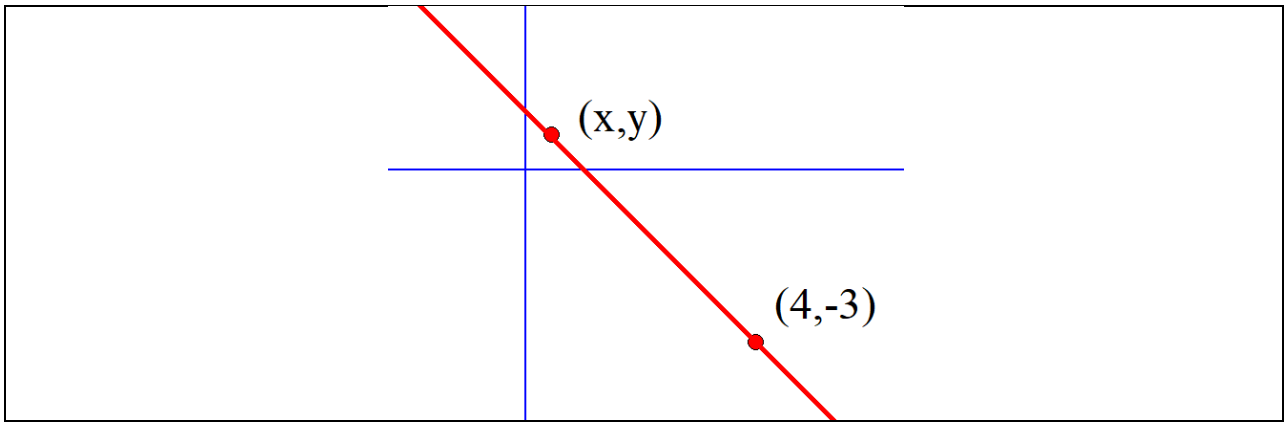
$7x - 7 = 3y - 15$

$7x + 8 = 3y$

$$y = \frac{7}{3}x + \frac{8}{3}$$

The correct answer is A.

Use the graph below to answer the next question.



4. If the slope of the line above is -1, determine the equation of the line.

Solution

$$slope = \frac{rise}{run}$$

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

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

$-x + 4 = y + 3$

$-x + 1 = y$

or $y = -x + 1$

The equation of the line is y = -x + 1.

5. The points (6,4) and (0, y) lie on a line that has a slope of $\frac{2}{3}$. Which statement is true?

   A) The equation is $y = \frac{2}{3}x$ and the value of y is 2.

   B) The equation is $y = \frac{2}{3}x$ and the value of y is 0.

   C) The equation is $y = \frac{6}{4}x$ and the value of y is 2.

   D) The equation is $y = \frac{6}{4}x$ and the value of y is 0.

Solution

To find the value of y, use the definition of slope.

$$\frac{2}{3} = \frac{y-4}{0-6}$$

(2)(-6) = 3(y – 4)

-12 = 3y – 12

Add 12 to both sides.

0 = 3y

y = 0.

Use the slope and one of the points to determine the equation.

$$\frac{2}{3} = \frac{y-4}{x-6}$$

2(x – 6) = 3(y – 4)

2x – 12 = 3y – 12

2x = 3y

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

The correct answer is B.