

# Graphing Linear Equations - Exam Review #3

1. Which of the following equations is linear?

a.  $xy = 6$

b.  $y = 2 - 3x$

c.  $y = 3x^2 + 1$

d.  $\frac{1}{x} = y$

2. Which of the following pairs of coordinates come from a line with a slope of  $\frac{1}{2}$ ?

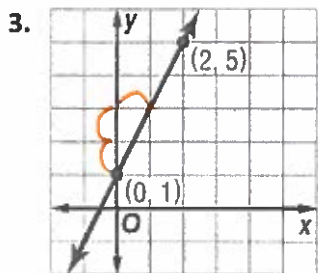
a.  $(2, 5), (-3, -5)$   $\frac{-5-5}{-3-2} = \frac{-10}{-5} = 2$

b.  $(-5, -8), (-8, 1)$   $\frac{1-(-8)}{-8-(-5)} = \frac{9}{-3} = -3$

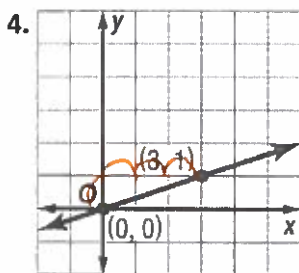
c.  $(-4, 5), (-8, -5)$   $\frac{-5-5}{-8-(-4)} = \frac{-10}{-4} = \frac{+5}{2}$

d.  $(-6, -4), (4, 1)$   $\frac{1-(-4)}{4-(-6)} = \frac{5}{10} = \frac{1}{2}$

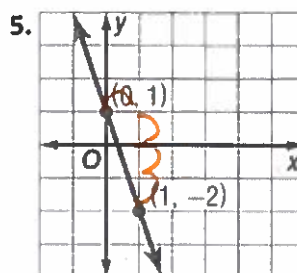
Find the slope of the line that passes through each pair of points.



$m = \frac{2}{1} = 2$



$m = \frac{1}{3}$



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

6. Write the formula for slope-intercept form. (HINT: It should include an  $y$ ,  $b$ ,  $x$ , and  $m$ )

$y = mx + b$

Write the linear equation in slope-intercept form for the line that has the given characteristics.

7. slope:  $-6$ ,  $y$ -intercept:  $-2$

$y = -6x - 2$

8. slope:  $7$ ,  $y$ -intercept:  $1$

$y = 7x + 1$

9. slope:  $1$ ,  $y$ -intercept:  $-12$

$y = x - 12$

10. slope:  $0$ ,  $y$ -intercept:  $8$

$y = 8$

Calculate the value for  $r$  which represents a line with the given slope. (Hint: Set up a proportion!)

11.  $(r, 2), (6, 3), m = \frac{1}{2}$

$\frac{3-2}{6-r} = \frac{1}{2} \rightarrow \frac{1}{6-r} = \frac{1}{2}$

$6-r = 2$

$-r = -4$

$r = 4$

12.  $(r, 4), (7, 1), m = \frac{3}{4}$

$\frac{1-4}{7-r} = \frac{3}{4} \rightarrow \frac{-3}{7-r} = \frac{3}{4}$

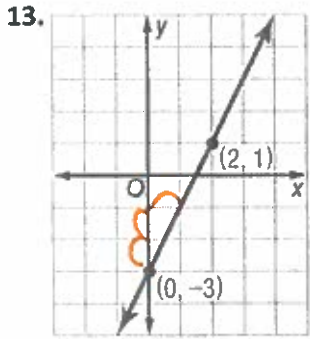
$3(7-r) = -12$

$21 - 3r = -12$

$-3r = -33$

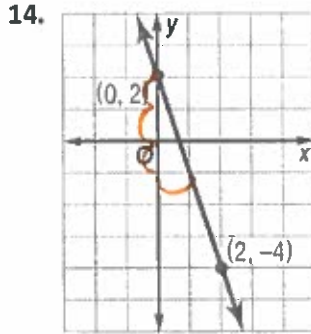
$r = 11$

Write an equation in slope-intercept form for each graph shown.



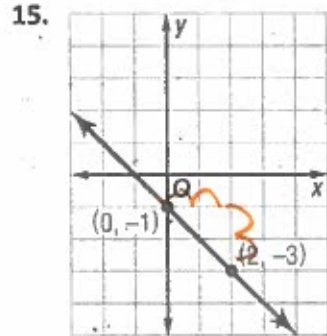
$m = \frac{2}{1}$   
 $b = -3$

$y = 2x - 3$



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

$y = -3x + 2$

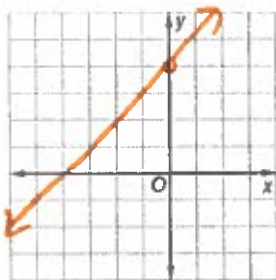


$m = \frac{-2}{2} = -1$   
 $b = -1$

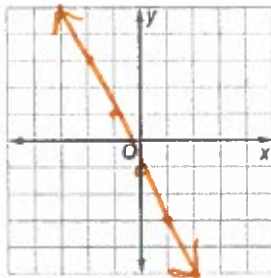
$y = -x - 1$

Graph each equation.

16.  $y = x + 4$

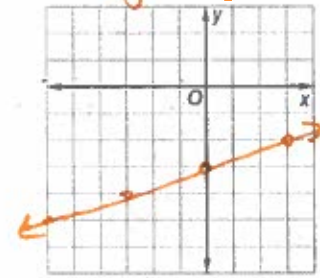


17.  $y = -2x - 1$



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

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



19. Which of the following equations has a slope of 4 and includes the coordinate (1, 9)?

- a.  $y = 4x + 5$
- b.  $y = 4x + 9$
- c.  $y = 4x + 1$
- d.  $y = 9x + 4$

$9 = 4(1) + b$   
 $9 = 4 + b$   
 $5 = b$

26. Write the equation of a line in slope-intercept form that includes the given point and is parallel to the given equation.  $(-4, 3)$ ,  $y = \frac{1}{4}x - 4$   $m = \frac{1}{4}$

$3 = \frac{1}{4}(-4) + b$   
 $3 = -1 + b$   
 $4 = b$

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

What is the slope of a line that is parallel to the given equation?

20.  $y = 3x + 4$

$m = 3$

21.  $y + 2x = 5$

$-2x - 2x \rightarrow y = -2x + 5$   
 $m = -2$

22.  $y = x - 4$

$m = 1$

What is the slope of a line that is perpendicular to the given equation?

23.  $y = -4x - 1$

$m = -4$

24.  $y = -x + 3$

$m = -1$

25.  $y = \frac{1}{2}x - 6$

$m = \frac{1}{2}$

27. Write the equation of a line in slope-intercept form that includes the given point and is perpendicular to the given equation.  $(1, 4)$ ,  $y = \frac{1}{2}x - 1$

$m = 2$

$4 = 2(1) + b$   
 $4 = 2 + b$   
 $-2 -2$   
 $2 = b$

$y = 2x + 2$