

Section 2.3 WS

Name KEY

1. The graph of a line with zero slope is horizontal.

2. The graph of a line whose slope is undefined is vertical.

Determine whether the graphs of the two equations are parallel, perpendicular, or neither.

3.  $y = 3x - 4$   
 $y = -3x + 2$

Neither

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

parallel

5.  $f(x) = 3x - 1$   
 $y = -\frac{x}{3} - 1$

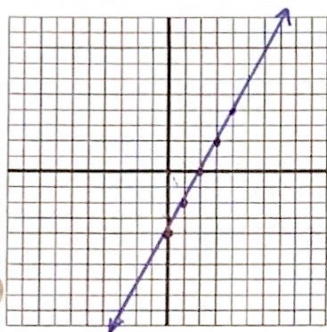
perpendicular

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

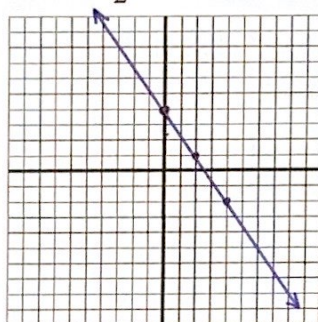
perpendicular

Graph the function.

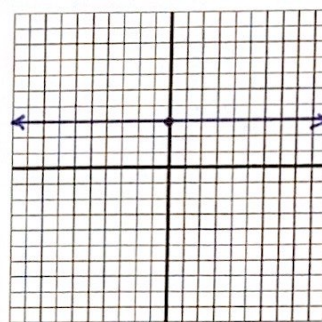
7.  $y = 2x - 4$



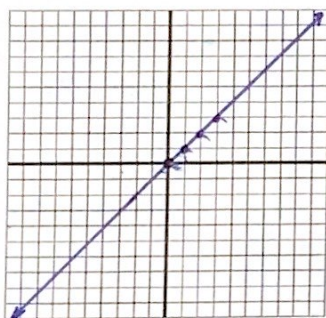
8.  $y = -\frac{3}{2}x + 4$



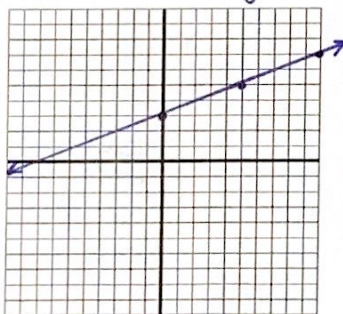
9.  $y = 3$



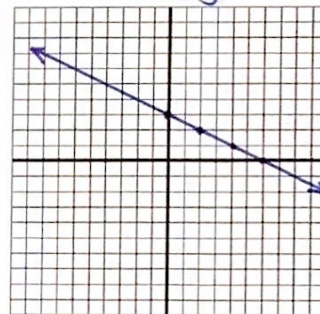
10.  $y = x$



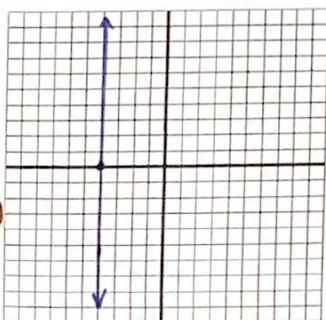
11.  $2x - 5y = -15$   $y = \frac{2}{5}x + 3$



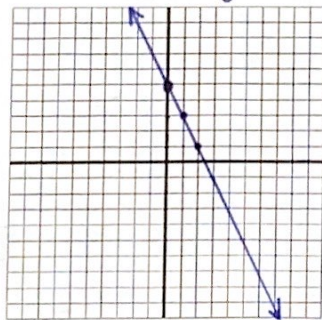
12.  $x + 2y = 6$   $y = -\frac{1}{2}x + 3$



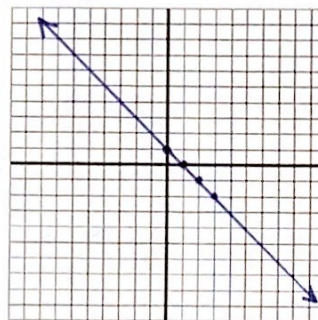
13.  $x = -4$



14.  $2x + y = 5$   $y = -2x + 5$



15.  $y = -x + 1$





Write the equation of the line in slope-intercept form that satisfies the given conditions.

16. Through  $(-3, 2)$ , slope  $-4$

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

$$\begin{array}{r} y - 2 = -4x - 12 \\ +2 \quad +2 \end{array}$$

$$\boxed{y = -4x - 10}$$

17. Through  $(1, 1)$ , slope  $4$

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

$$\begin{array}{r} y - 1 = 4x - 4 \\ +1 \quad +1 \end{array}$$

$$\boxed{y = 4x - 3}$$

18. Through  $(-6, 2)$ , slope  $\frac{2}{3}$

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

$$\begin{array}{r} y - 2 = \frac{2}{3}x + 4 \\ +2 \quad +2 \end{array}$$

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

19. Through  $(8, -1)$  and  $(-4, 2)$

$$m = \frac{2 + 1}{-4 - 8} = \frac{3}{-12} = -\frac{1}{4}$$

$$y + 1 = -\frac{1}{4}(x - 8)$$

$$\begin{array}{r} y + 1 = -\frac{1}{4}x + 2 \\ -1 \quad -1 \end{array}$$

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

20. Through  $(-2, 1)$  and  $(5, 1)$

$$m = \frac{1 - 1}{5 + 2} = \frac{0}{7} = 0$$

$$y - 1 = 0(x - 5)$$

$$\boxed{y = 1}$$

21. Through  $(1, -3)$  and  $(-1, -9)$

$$m = \frac{-9 + 3}{-1 - 1} = \frac{-6}{-2} = 3$$

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

$$\begin{array}{r} y + 3 = 3x - 3 \\ -3 \quad -3 \end{array}$$

$$\boxed{y = 3x - 6}$$

22. The graph is parallel to the graph of  $y = \frac{2}{3}x - 1$  and passes through the point whose coordinates are  $(-3, -1)$ .

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

$$\begin{array}{r} y + 1 = \frac{2}{3}x + 2 \\ -1 \quad -1 \end{array}$$

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

23. The graph is parallel to the graph of  $2x - 5y = 2$  and passes through the point whose coordinates are  $(5, 2)$ .

$$2x - 5y = 2$$

$$\begin{array}{r} -5y = -2x + 2 \\ -5 \quad -5 \end{array}$$

$$y = \frac{2}{5}x - \frac{2}{5}$$

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

$$\begin{array}{r} y - 2 = \frac{2}{5}x - 2 \end{array}$$

$$\boxed{y = \frac{2}{5}x}$$

24. The graph is perpendicular to the graph of  $y = -x + 3$  and passes through the point whose coordinates are  $(-5, 2)$ .

$$m_{\perp} = 1$$

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

$$y - 2 = x + 5$$

$$\boxed{y = x + 7}$$

25. The graph is perpendicular to the graph of  $3x - 2y = 5$  and passes through the point whose coordinates are  $(-3, 4)$ .

$$3x - 2y = 5$$

$$\begin{array}{r} -2y = -3x + 5 \\ -2 \quad -2 \end{array}$$

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

$$m_{\perp} = -\frac{2}{3}$$

$$y - 4 = -\frac{2}{3}(x + 3)$$

$$\begin{array}{r} y - 4 = -\frac{2}{3}x - 2 \\ +4 \quad +4 \end{array}$$

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