

Section 2.3 WS 2

Name KEY

Find the slope of the line that passes through the given points.

1. $(-5, -1)$ and $(-3, 4)$

$$m = \frac{4 - (-1)}{-3 - (-5)} = \frac{5}{2}$$

2. $(-4, \frac{1}{2})$ and $(\frac{7}{3}, \frac{7}{2})$

$$m = \frac{\frac{7}{2} - \frac{1}{2}}{\frac{7}{3} - (-4)} = \frac{3}{\frac{19}{3}} = \frac{9}{19}$$

3. $(\frac{1}{2}, 4)$ and $(\frac{7}{4}, 2)$

$$m = \frac{2 - 4}{\frac{7}{4} - \frac{1}{2}} = \frac{-2}{\frac{5}{4}} = \frac{-8}{5}$$

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

4. $y = x$
 $y = -x - 12$

Perpendicular

Graph the function.

5. $y = \frac{4}{5}x - 7$

$y = 6 + \frac{4x}{5}$

parallel

6. $f(x) = \frac{2}{3}x + 10$

$-6x - 9y = 22$ $m = \frac{6}{-9} = -\frac{2}{3}$

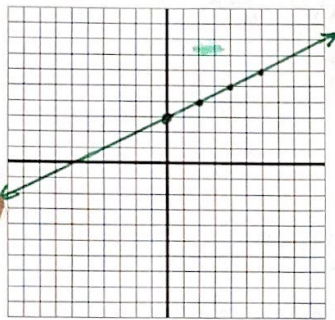
Neither

$5x + 25y = -11$ $m = \frac{-5}{25} = -\frac{1}{5}$

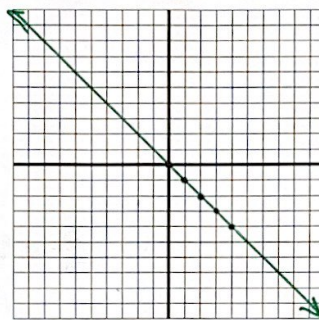
$-x - 5y = 6$ $m = \frac{1}{5} = \frac{1}{5}$

Parallel

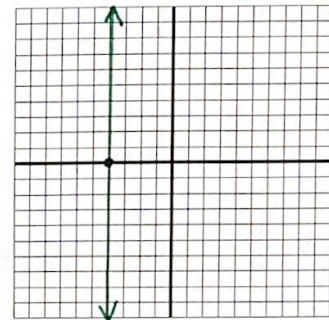
8. $y = \frac{1}{2}x + 3$



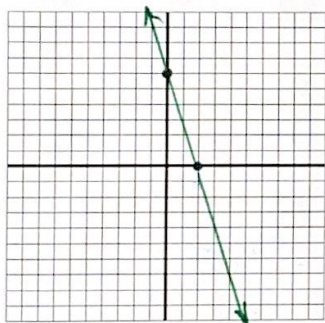
9. $y = -x$



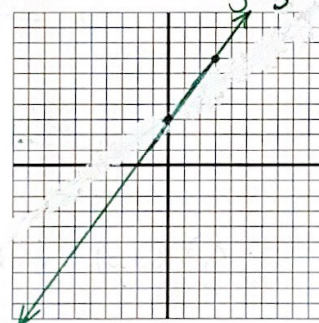
10. $x = -4$



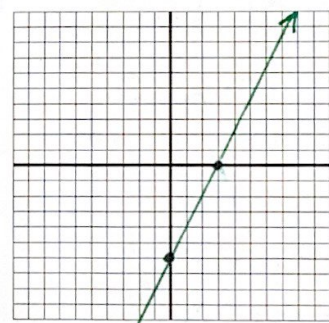
11. $3x + y = 6$



12. $4x - 3y = -9$ $y = \frac{4}{3}x + 3$



13. $4x - 2y = 12$



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

14. Through $(0, 5)$, slope -2

$$y = -2x + 5$$

15. Through $(-5, -1)$, slope 6

$$y + 1 = 6(x + 5)$$

$$y + 1 = 6x + 30$$

$$y = 6x + 29$$

16. Through $(0, \frac{3}{4})$, slope $\frac{3}{4}$

$$y = \frac{3}{4}x + \frac{3}{4}$$

17. Through (3,1) and (-1,4)

$$m = \frac{4-1}{-1-3} = \frac{3}{-4} = -\frac{3}{4}$$

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

$$y-1 = -\frac{3}{4}x + \frac{9}{4}$$

$$\frac{y-1}{+1} = \frac{-\frac{3}{4}x + \frac{9}{4}}{+\frac{4}{4}}$$

$$y = -\frac{3}{4}x + \frac{13}{4}$$

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

$$m = 2$$

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

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

$$y = 2x - 8$$

18. Through (5, -6) and (2, -8)

$$m = \frac{-8+6}{2-5} = \frac{-2}{-3} = \frac{2}{3}$$

$$y+6 = \frac{2}{3}(x-5)$$

$$y+6 = \frac{2}{3}x - \frac{10}{3}$$

$$y = \frac{2}{3}x - \frac{28}{3}$$

$$\frac{-10}{3} - \frac{16}{3} = \frac{-28}{3}$$

20. The graph is parallel to the graph of $3x + 4y = 12$ and passes through the point whose coordinates are (-4, 2).

$$m = -\frac{3}{4}$$

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

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

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

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

$$m_{\perp} = -\frac{1}{2}$$

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

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

$$y = -\frac{1}{2}x - \frac{5}{2}$$

$$\frac{3}{2} - \frac{8}{2}$$

$$-\frac{5}{2}$$

22. The graph is perpendicular to the graph of $5x - y = 2$ and passes through the point whose coordinates are (10, -2).

$$m = \frac{-5}{-1} = 5 \quad m_{\perp} = -\frac{1}{5}$$

$$y+2 = -\frac{1}{5}(x-10)$$

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

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

Application Problems:

23. Pg. 194 #73

$$(12, 20) \dot{=} (23, 31)$$

a) $H(c) = c + 8$

b) $H(c) = 19 + 8$

$$H(c) = 27 \text{ mpg}$$

24. Pg. 196 #89

a) $C(t) = 6.75t + 19,500$

b) $R(t) = 55t$

c) $P(t) = R(t) - C(t)$

$$P(t) = 48.25t - 19,500$$

d) $55t = 6.75t + 19,500$

$$48.25t = 19,500$$

$$t = 404.15$$

$$\text{Approximately 405 days}$$