Section 2.2 WS **Name** _____

Determine whether the equation defines y as a function of x.

1. $2x + 3y = 7$ Function

2. $5x + y = 8$ Function

3. $-x^2 + y^2 = 2$ Not a Function

4. $x^2 - 2y = 2$ Function

Evaluate each function.

5. Given $f(x) = 3x - 1$, find

a. $f(2)$ 5 b. $f(-1)$ -4 c. $f(0)$ -1 d. $f\left(\frac{2}{3}\right)$ 1 e. $f(k)$ $3k-1$ f. $f(k+2)$ $3k+5$

6. Given $g(x) = 2x^2 + 3$, find

a. $g(3)$ 21 b. $g(-1)$ 5 c. $g(0)$ 3 d. $g\left(\frac{1}{2}\right)$ $\frac{7}{2}$ e. $g(c)$ $2c^2+3$ f. $g(c+5)$ $2c^2+20c+53$

Determine the domain of the function represented by the given equation.

7. $f(x) = 3x - 4$ $(-\infty, \infty)$ or $\mathbb{R}$

8. $f(x) = x^2 + 2$ $(-\infty, \infty)$ or $\mathbb{R}$

9. $f(x) = \frac{4}{x+2}$ $\{x \mid x \neq -2\}$ or $(-\infty, -2) \cup (-2, \infty)$

10. $f(x) = \sqrt{7 + x}$ $\{x \mid x \geq -7\}$ or $[-7, \infty)$

11. $f(x) = \sqrt{9 - x^2}$

$9 - x^2 \geq 0$

$-x^2 \geq -9$

$x^2 \leq 9$

$x = \pm 3$

− + −

$-3 \quad 3$

$[-3, 3]$

Find the value or values of a in the domain of f for which $f(a)$ equals the given number.

12. $f(x) = 3x - 2, f(a) = 10$

$3x - 2 = 10$

$x = 4$

$a = 4$

13. $f(x) = x^2 + 2x - 2, f(a) = 1$

$x^2 + 2x - 2 = 1$

$x = -3, 1$

$a = -3, 1$

14. $f(x) = |x|, f(a) = 4$

$|x| = 4$

$x = \pm 4$

$a = \pm 4$

15. $f(x) = x^2 + 2, f(a) = 1$

$x^2 + 2 = 1$

$x = \pm i$

$a = \pm i$, $a =$ No Real #'s

Find the zeros of f.

16. $f(x) = 3x - 6$

$3x - 6 = 0$

$x = 2$

17. $f(x) = 5x + 2$

$5x + 2 = 0$

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

18. $f(x) = x^2 - 4$

$x^2 - 4 = 0$

$x = \pm 2$

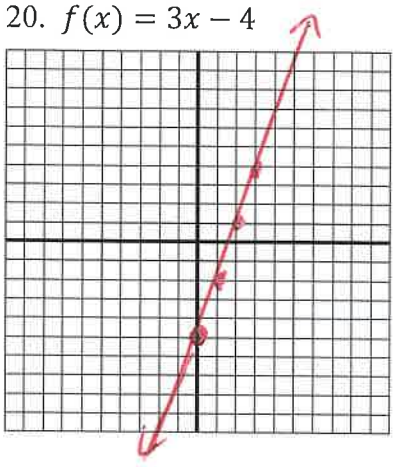
19. $f(x) = x^2 - 5x - 24$

$x^2 - 5x - 24 = 0$

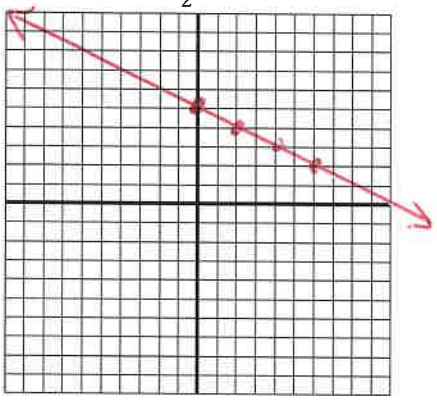
$x = -3, 8$

Graph each function.

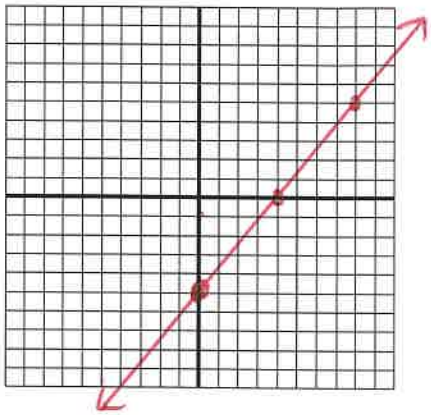
20. $f(x) = 3x - 4$



21. $h(x) = -\frac{1}{2}x + 5$



22. $5x - 4y = 20$



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

23. Through $(1, -1)$, slope 5

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

$y = 5x - 6$

24. Through $(8, -2)$, slope $-\frac{3}{4}$

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

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

25. Through $(-3, -7)$ and $(6, -1)$

$\frac{-7 - -1}{-3 - 6} = \frac{-6}{-9} = \frac{2}{3}$

$y + 1 = \frac{2}{3}(x - 6)$

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

Section 2.3 WS

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

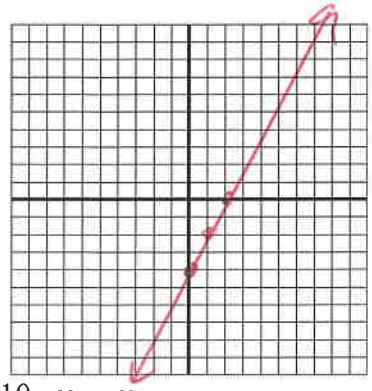
Perpendicular

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

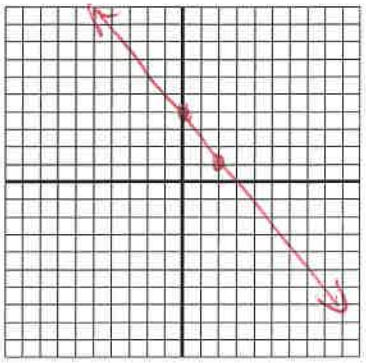
Perpendicular

Graph the function.

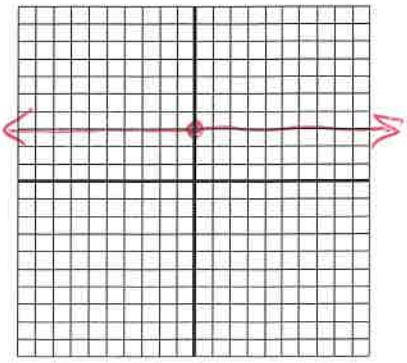
7. $y = 2x - 4$



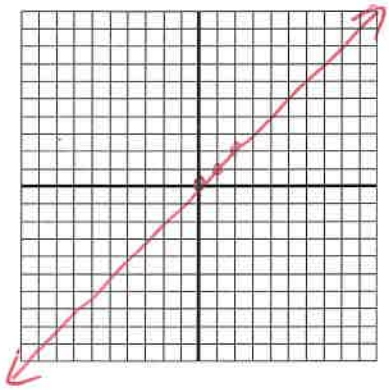
8. $y = -\frac{3}{2}x + 4$



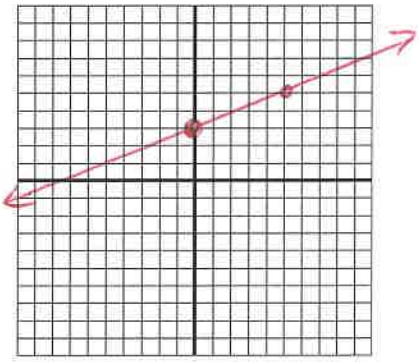
9. $y = 3$



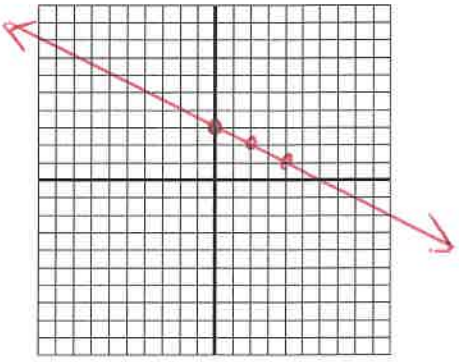
10. $y = x$



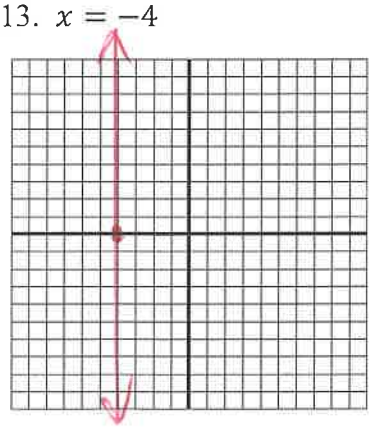
11. $2x - 5y = -15$



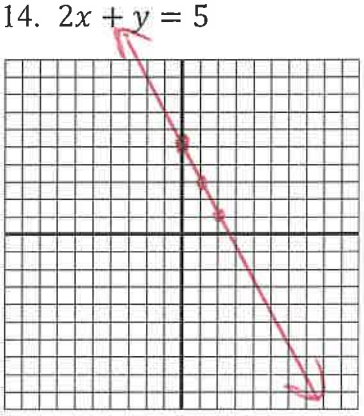
12. $x + 2y = 6$



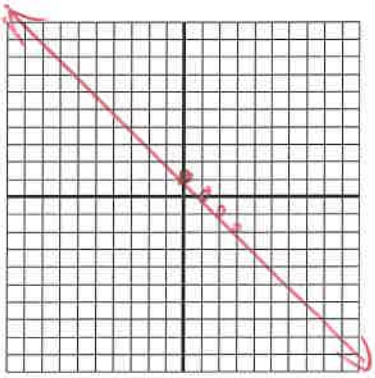
13. $x = -4$



14. $2x + y = 5$



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

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

$y = -4x - 10$

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

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

$y = 4x - 3$

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

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

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

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

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

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

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

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

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

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

$y = 1$

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

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

$y + 9 = 3(x + 1)$

$y = 3x - 6$

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

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

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

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

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

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

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

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

$y = x + 7$

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

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

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