Worksheet 2.2-2.4 A

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

1. $(-3,4),(-3,-1),(2,-4)$ — No
2. $x + y^2 = 9$ — No
3. $y = \sqrt{x^2 - 3}$ — Yes
4. $2x - y = 6$ — Yes

Let $f(x) = 2x^2 - 3$, evaluate.

5. $f(2)$ — 5
6. $f(-2)$ — 5
7. $f(x+1)$ — $2x^2 + 4x - 1$
8. $f(x-2)$ — $2x^2 - 8x + 5$

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

9. $f(x) = x^2 - 2x - 9, f(a) = -1$ — 4, -2
10. $f(x) = 4x + 7, f(a) = -21$ — -7
11. $f(x) = 3x - 5, f(a) = -20$ — -5
12. $(x) = x^2 + 4x - 9, f(a) = 3$ — 2, -6

Find the zeros of f.

13. $f(x) = 6x + 18$ — -3
14. $f(x) = 3x - 9$ — 3
15. $f(x) = 3x^2 - 2x - 8$ — $2, -\frac{4}{3}$
16. $f(x) = 3x^2 - 13x + 12$ — $\frac{4}{3}, 3$

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

17. Through $(-4,3)$, slope $= -2$ — $y = -2x - 5$
18. Through $(-3,5)$ and $(-5,9)$ — $y = -2x - 1$

$\frac{5-9}{-3--5} = \frac{-4}{2} = -2$

19. Through $(2,-7)$ and $(4,-8)$

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

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

20. Through $(3,6)$, slope $= -3$ — $y = -3x + 15$

21. Write the equation of line in slope-intercept form for the line that passes through the point with coordinates $(-3,8)$ and is perpendicular to the graph $3x - 4y = 12$. $y = \frac{3}{4}x - 3$ $m = -\frac{4}{3}$

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

22. Write the equation of line in slope-intercept form for the line that passes through the point with coordinates $(6,-4)$ and is parallel to the graph $y = \frac{1}{3}x + 1$.

$y = \frac{1}{3}x - 6$

23. Write the equation of line in slope-intercept form for the line that passes through the point with coordinates $(7,-5)$ and is parallel to the graph $2x + 7y = 14$. $y = -\frac{2}{7}x + 2$ $m = -\frac{2}{7}$

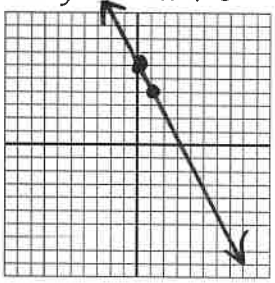
$y = -\frac{2}{7}x - 3$

24. Write the equation of line in slope-intercept form for the line that passes through the point with coordinates $(-1,-2)$ and is perpendicular to the graph $y = \frac{1}{4}x - 5$. $m = -4$

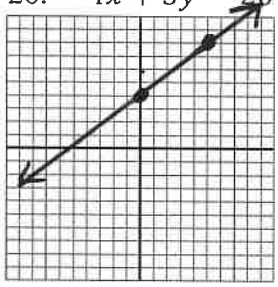
$y = -4x - 6$

Graph the function and state the axis of symmetry.

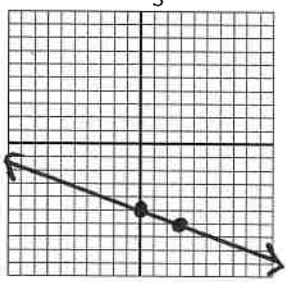
25. $y = -2x + 6$



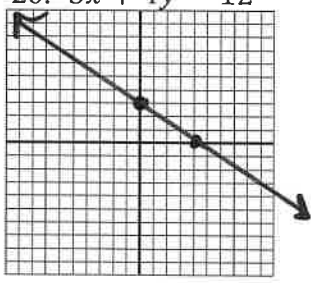
26. $-4x + 5y = 20$ $y = \frac{4}{5}x + 4$



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



28. $3x + 4y = 12$ $y = -\frac{3}{4}x + 3$



Write the quadratic function in vertex form.

29. $f(x) = 2x^2 - 8x + 3$

$y = 2(x-2)^2 - 5$

30. $f(x) = -3x^2 + 18x + 7$

$y = -3(x-3)^2 + 34$

31. $f(x) = -4x^2 - 8x + 5$

$y = -4(x+1)^2 + 9$

32. $f(x) = 5x^2 + 40x - 12$

$y = 5(x+4)^2 - 92$

Find the minimum or maximum value of the function. State whether this value is a minimum or a maximum.

33. $h(x) = x^2 + 8x + 12$

Min $= -4$

34. $f(x) = 4x^2 - 8$

Min $= -8$

35. $h(x) = x^2 + 2x - 24$

Min $= -25$

36. $f(x) = -3x^2 + 12x - 4$

Max $= 8$