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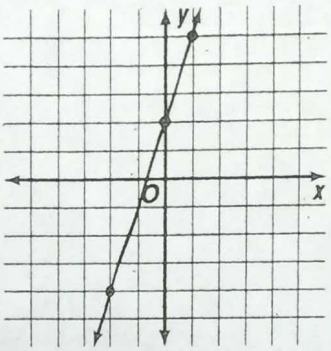
8-4 Study Guide
Equations as Functions

Student Edition
Pages 392–395

Suppose $y = 3x + 2$ and the domain is $\{-2, 0, 1\}$. Make a table of the domain and corresponding range values.

x	y
−2	−4
0	2
1	5

Graph $y = 3x + 2$ using the ordered pairs.



Using the vertical line test, we find that $y = 3x + 2$ is a function.

Equations that represent functions can be written in **functional notation, $f(x)$**. The symbol $f(x)$ represents the value in the range that corresponds to the value of x in the domain. The equation $y = 3x + 2$ can be written as $f(x) = 3x + 2$.

To determine a functional value, substitute the given value for x in the equation. For example, if $f(x) = 3x + 2$ and $x = -3$, then $f(-3) = 3(-3) + 2$ or -7.

For each equation,
a. solve for the domain = {−4, 0, 1}, and
b. determine whether the equation is a function.

1. $x + y = 12$
2. $x = 3 - y$
3. $y = 8 + x^2$

Given $h(x) = 2x - 9$ and $g(x) = x^2 + 4$, find each value.

4. $h(-3)$
5. $g(-5)$
6. $5[h(0)]$
7. $g\left(-\frac{1}{4}\right)$
8. $g(2.2b)$
9. $g(3a)$
10. $h(-0.48)$
11. $2[g(2)]$
12. $h\left(\frac{1}{2}\right)$

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8-4 Practice

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For each equation,
a. solve for the domain = {-1, 0, 2, 8}, and
b. determine if the equation is a function.

1. $x + y = 16$
2. $xy = 240$
3. $y = 8 + 2x$
4. $x = y - 28$
5. $y = -5$
6. $\frac{1}{4}x - 3 = y$
7. $x = 8$
8. $x^2 - 4 = y$
9. $y = 6x - 12$

Given f(x) = 4x + 1 and g(x) = x − 3, find each value.

10. $f(3)$
11. $g(8)$
12. $g(-2)$
13. $f(-18)$
14. $f(-2.5)$
15. $f\left(\frac{1}{4}\right)$
16. $g(2.35)$
17. $g\left(\frac{1}{2}\right)$
18. $g(4c)$
19. $f(3d)$
20. $4[f(a)]$
21. $f(0)$
22. $2[g(0)]$
23. $3[f(4)]$
24. $g[g(6)]$