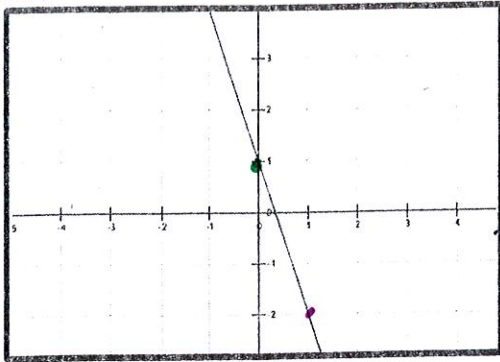


Algebra 1
More Functions

Name _____
Date _____ Period _____

Warm-up: For each, evaluate $f(1)$. Use the function statement to create an ordered pair solution.

1.



$f(1) = \underline{-2} \rightarrow (\underline{1}, \underline{-2})$

2.

| | | | | |
|------|----|----------|----|----------|
| x | 0 | <u>1</u> | 2 | 3 |
| f(x) | -3 | 2 | -4 | <u>1</u> |

$f(1) = \underline{2} \rightarrow (\underline{1}, \underline{2})$

3. $f(x) = 3x + 13$

$f(1) = \underline{16} \rightarrow (\underline{1}, \underline{16})$

$f(1) = 3(1) + 13$
 $f(1) = 16$

When you are given a problem in the form $f(1) = \underline{\hspace{1cm}}$, the number 1 represents the input (x-value), and your job is to find the corresponding y-value. What if instead you were given $f(\underline{\hspace{1cm}}) = 1$. In this case, the number 1 represents the output (y-value) and your job would be to give the x-value that result in this output. Let's try a few:

Using each of the functions ABOVE, determine where $f(x) = 1$.

1. $f(\underline{0}) = 1$ (graph)

2. $f(\underline{3}) = 1$ (table)

3. $f(\underline{-4}) = 1$ (function)

$1 = 3x + 13$
 $-12 = 3x$
 $x = -4$

Exercises: Fill in the blank with the correct x-value.

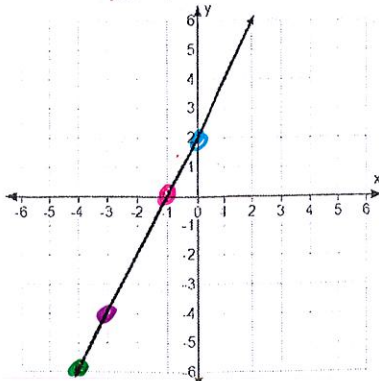
4. If $g(x) = 4x - 7$, determine when $g(x) = 21$.
 $g(\underline{7}) = 21$

$4x - 7 = 21$
 $4x = 28$
 $x = 7$

5. If $h(x) = 3 - 2x$, determine when $h(x) = -9$.
 $h(\underline{6}) = -9$

$-9 = 3 - 2x$
 $-12 = -2x$
 $x = 6$

6. Use the graph to fill in each blank.



a.) $f(-4) = \underline{-6}$

c.) $f(\underline{-3}) = -4$

b.) $f(0) = \underline{2}$

d.) $f(\underline{-1}) = 0$

7. Use the table to fill in each blank.

| | | | | |
|------|----------|----------|---|----------|
| x | -2 | <u>0</u> | 3 | <u>5</u> |
| f(x) | <u>5</u> | 1 | 2 | <u>0</u> |

a.) $f(5) = \underline{0}$

c.) $f(\underline{-2}) = 5$

b.) $f(0) = \underline{1}$

d.) $f(\underline{5}) = 0$

Sample problem: Given the function $f(x) = -3x + 7$, find

a. $f(-5)$

$$f(-5) = -3(-5) + 7$$

$$= 15 + 7 = \boxed{22}$$

b. the value of x for which $f(x) = -5$

$$-3x + 7 = -5$$

$$\frac{-3x + 7}{-7} = \frac{-5}{-7}$$

$$-3x = -12$$

$$\boxed{x = 4}$$

Part 1: Use $f(x) = \frac{x-1}{4}$, $g(x) = 5-2x$, and $h(x) = x^2 + 2x$ to answer each question.

1. $f(17)$

$$f(17) = \frac{17-1}{4}$$

$$f(17) = \frac{16}{4}$$

$$f(17) = 4$$

2. $g(4)$

$$g(4) = 5 - 2(4)$$

$$g(4) = 5 - 8$$

$$g(4) = -3$$

3. $h(2)$

$$h(2) = (2)^2 + 2(2)$$

$$h(2) = 4 + 4$$

$$h(2) = 8$$

4. $f(x) = -6$

$$-6 = \frac{x-1}{4}$$

$$-24 = x-1$$

$$x = -23$$

$$h(-23) = -6$$

5. $h(-3)$

$$h(-3) = (-3)^2 + 2(-3)$$

$$h(-3) = 9 - 6$$

$$h(-3) = 3$$

6. $g(x) = 11$

$$5 - 2x = 11$$

$$-2x = 6$$

$$x = -3$$

$$g(-3) = 11$$

7. $f(x) = 9$

$$9 = \frac{x-1}{4}$$

$$36 = x-1$$

$$x = 37$$

$$f(37) = 9$$

8. $g(x) = -17$

$$5 - 2x = -17$$

$$-2x = -22$$

$$x = 11$$

$$g(11) = -17$$

9. $f(2)$

$$f(2) = \frac{2-1}{4}$$

$$f(2) = \frac{1}{4}$$

*10. $f(x) + g(1)$

$$\frac{x-1}{4} + 3$$

$$\frac{x-1}{4} + 3$$

Part 2: Use the graph of $y = f(x)$ to answer each question.

11. $f(1) = 1$

12. $f(-1) = -3$

13. $f(x) = 1$
 $x = 1$

if needed

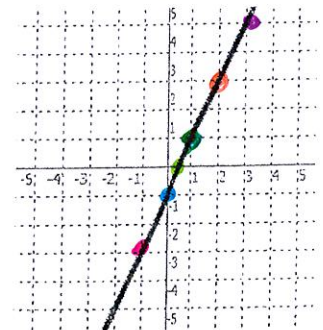
14. $f(x) = -1$
 $x = 0$

15. $f(3) = 5$

16. $f(0) = -1$

17. $f(x) = 3$
 $x = 2$

18. $f(x) = 0$
 $x = 1, 2$



Part 3: Use the chart to answer each question.

| | | | | | | | | |
|------|----|----|---|---|----|----|---|----|
| x | -3 | -2 | 0 | 1 | 4 | 5 | 7 | 10 |
| f(x) | 4 | 0 | 6 | 2 | -2 | 10 | 0 | -3 |

19. $f(1) = 2$

20. $f(-2) = 0$

21. $f(x) = -2$
 $x = 4$

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

23. $f(10) = -3$

24. $f(0) = 6$

25. $f(x) = 10$
 $x = 5$

26. $f(x) = 0$
 $x = -2, 7$

27. $f(-3) = 4$

28. $f(x) = -3$
 $x = 10$

Name _____

(F) $p(x) = \frac{-1}{3}x$; Find $p(-3)$

$$p(-3) = \frac{-1}{3}(-3)$$

$$p(-3) = 1$$

(G) $g(n) = n^2 - 60$; Find $g(8)$

$$g(8) = (8)^2 - 60$$

$$g(8) = 64 - 60$$

$$g(8) = 4$$

* (H) $m(x) = (-x)^2 + 3x - 4$; Find $m(2)$

$$m(2) = (-2)^2 + 3(2) - 4$$

$$m(2) = 4 + 6 - 4$$

$$m(2) = 6$$

add parentheses

(I) $h(t) = 3t + t + 7$; Find $h(-1)$

$$h(-1) = 3(-1) + (-1) + 7$$

$$h(-1) = -3 - 1 + 7$$

$$h(-1) = 3$$

(J) $f(x) = 3 - 2x$; Find $f\left(\frac{1}{2}\right)$

$$f\left(\frac{1}{2}\right) = 3 - 2\left(\frac{1}{2}\right)$$

$$f\left(\frac{1}{2}\right) = 3 - 1$$

$$f\left(\frac{1}{2}\right) = 2$$

(K) $f(x) = -3x + 2$; Find $f\left(\frac{1}{3}\right)$

$$f\left(\frac{1}{3}\right) = -3\left(\frac{1}{3}\right) + 2$$

$$f\left(\frac{1}{3}\right) = -1 + 2$$

$$f\left(\frac{1}{3}\right) = 1$$

(L) $w(a) = a$; Find $w(2)$

$$w(2) = 2$$

(M) $w(x) = x + x^2 - 1$; Find $w(2)$

$$w(2) = (2) + (2)^2 - 1$$

$$w(2) = 2 + 4 - 1$$

$$w(2) = 5$$

(N) $w(a) = a^2 + 5a + 7$; Find $w(0)$

$$w(0) = (0)^2 + 5(0) + 7$$

$$w(0) = 0 + 0 + 7$$

$$w(0) = 7$$

Clues:

(A) $f(x) = -x - 7$; Find $f(-10)$

$$f(-10) = -(-10) - 7$$

$$f(-10) = 10 - 7$$

$$f(-10) = 3$$

(B) $h(x) = x^3 + 6x - 79$; Find $h(4)$

$$h(4) = (4)^3 + 6(4) - 79$$

$$h(4) = 64 + 24 - 79$$

$$h(4) = 9$$

(C) $w(a) = -a^2 + 5a + 22$; Find $w(7)$

$$w(7) = -(7)^2 + 5(7) + 22$$

$$w(7) = -49 + 35 + 22$$

$$w(7) = 8$$

(D) $h(a) = -2 - \frac{1}{4}a$; Find $h(-36)$

$$h(-36) = -2 - \frac{1}{4}(-36)$$

$$h(-36) = -2 + 9$$

$$h(-36) = 7$$

(E) $g(x) = x^3 + 5x - 145$; Find $g(5)$

$$g(5) = (5)^3 + 5(5) - 145$$

$$g(5) = 125 + 25 - 145$$

$$g(5) = 5$$