Writing & Evaluating Functions Homework

Directions: Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable. Do not forget to complete the "Transfer" and "Throwback" problems! ☺

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1. The cost of frozen yogurt depends on the number of ounces of yogurt purchased. Explain why this situation can be modeled by a function. If each ounce costs 35 cents, write a function C to model the cost for w ounces of frozen yogurt.

2. Determine each requested value, provided that...

$$f(d) = -\frac{1}{3}d^2 - d + 1 \qquad m(s) = -(s-3)^2 \qquad b(r) = \frac{-2}{r} - 3 \qquad h(p) = |3p - 8| + 2$$

a. m(0)

b. f(-9x)

c. h(2y – 1)

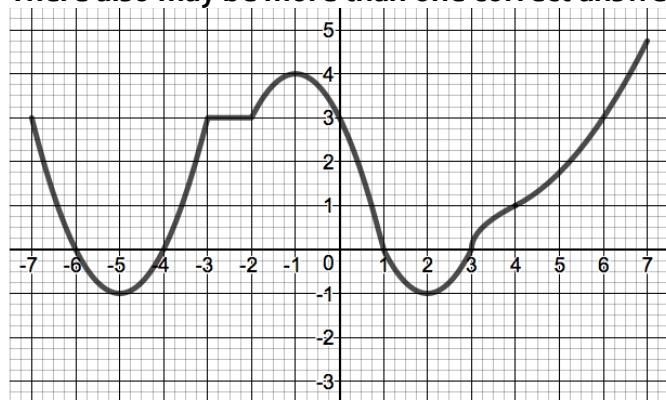d. b(4)

e. f(w⁴)

f. h(0)

g. m(7k)

h. 2b(8)

i. -3f(12)

j. m(x + 1)

k. Choose a value for p such that h(p) = 4.

3. Provided with the graph of f(x) below, complete each of the following.

*NOTE: Be sure to only state integer values for our purposes.
There also may be more than one correct answer for some of these.

a. f(-6) = _____

b. f(___) = 4

c. f(2) = _____

d. f(-2) = _____

e. f(-8) = _____

f. f(___) = -1

g. f(___) = 3

h. f(___) = 1

4. Sketch any graph for a function f(x) for which f(2) = -3 and f(x) < 0 on the interval (-2,2).

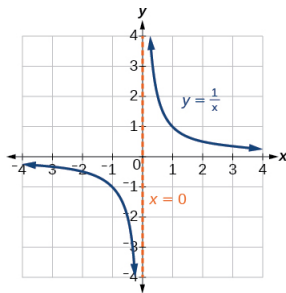# Transfer

1. Given the graph of f(x), answer each question.
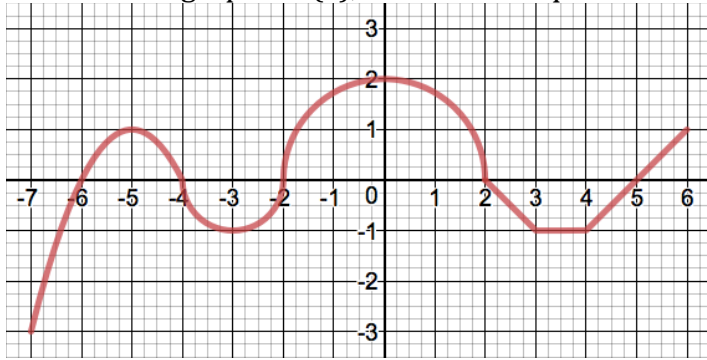
a. For what values does f(x) = 0?
b. State any domain on which f(x) > 0.
c. State any domain on which f(x) is decreasing.
d. Is f(x) increasing, decreasing, or constant on the interval (3, 4)?

    # Throwback

1. **Multiple Choice**
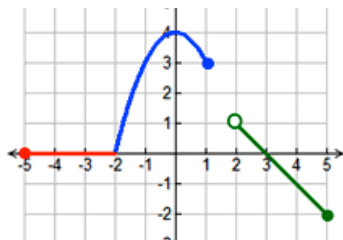 Which is the most appropriate domain of the function?

a. $(-\infty,\infty)$

b. $(-\infty,0]\cup[0,\infty)$

c. $(-\infty,0)\cup(0,\infty)$

d. -4 < x < 0 and 0 < x < 4

2. **Multiple Choice**
Which is the most appropriate domain of the function?

a. $(-\infty,1)\cup(2,\infty)$

b. $(-2,1)\cup(3,4)$

c. $[-5,5]$

d. $[-5,1]\cup(2,5]$

3.   Sanjay is designing a rectangular structure to use as a base for his art project. He wants the length to be exactly 7 inches shorter than the width and he wants the width to be no less than 10 inches long. Sanjay has a total of 78 inches of wood to use for the perimeter of the structure. Determine the range of widths Sanjay can use for this structure. Express your answer as a compound inequality and explain your inequality using a short sentence.

4.   Solve for x. $wx + rx = fg$
Also state any restrictions.
 (That is, are there any values that any of the variables cannot be, and why?)

Selected Solutions

2.

a. $m(0) = -9$

c. $h(2y - 1) = |6y - 11| + 2$

d. $b(4) = -\dfrac{7}{2}$

f. $h(0) = 10$

g. $m(7k) = -(7k - 3)^2$ which expands to $m(7k) = -49k^2 + 42k + 9$

j. $m(x + 1) = -(x - 2)^2$ which expands to $m(x + 1) = -x^2 + 4x + 4$

k. $p = 2$ or $p = \dfrac{10}{3}$

3.

a. $f(-6) = 0$

c. $f(2) = -1$

e. $f(-8) =$ undefined

f. $f(-5) = -1$ or $f(2) = -1$

h. $f(4) = 1$

Transfer

1. a. $f(x) = 0$ when $x = -6, -4, -2, 2,$ and 5, so
{-6, -4, -2, 2, 5}
(crosses the x-axis)

b. $f(x) > 0$ on all of the following intervals:

   (-6, -4)   (-2, 2)   (5, 6)

(above the x-axis)

c. $f(x)$ is decreasing (moving down from left to right) on all of the following intervals

   (-5, -3)   (0, 3)

d. constant (not moving up or down)

<u>Throwback!</u>

1. c

2. d

3. $10 \le w \le 23$ The width must be between 10 inches and 23 inches.

4. x(w + r) = fg

so $x = \dfrac{fg}{w + r}$

restrictions: w + r cannot equal zero, so w cannot equal –r. (since you cannot divide by zero)