

hw-14a-determining-and-evaluating-functions

Due: 12/13/2015 at 06:00am EST.

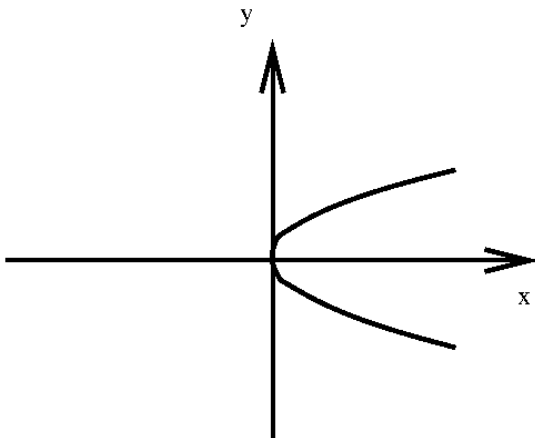
Students will be able to:

- Identifying Functions
- Evaluating Single Functions
- Solve Functions using particular functional $f(x)$ values
- Evaluating Arithmetic Functions

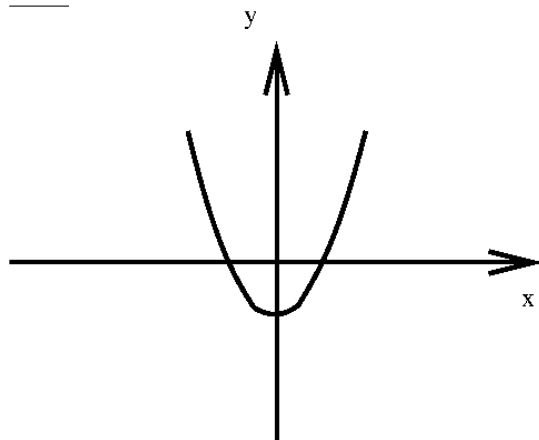
Functions and symbols that WeBWorK understands.

Links to some useful WeBWorK pages for students

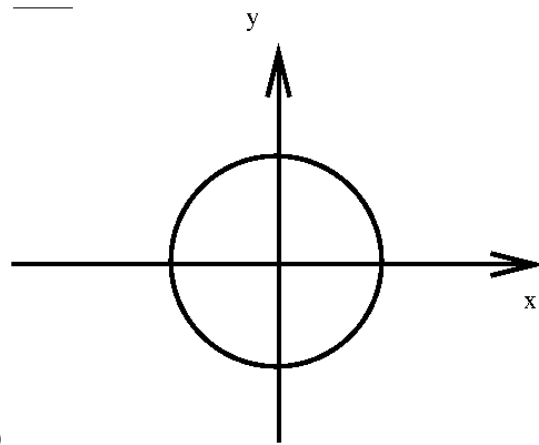
1. (1 pt) For each of the following graphs, determine whether or not it represents y as a function of x . Type YES or NO to the right of each graph.



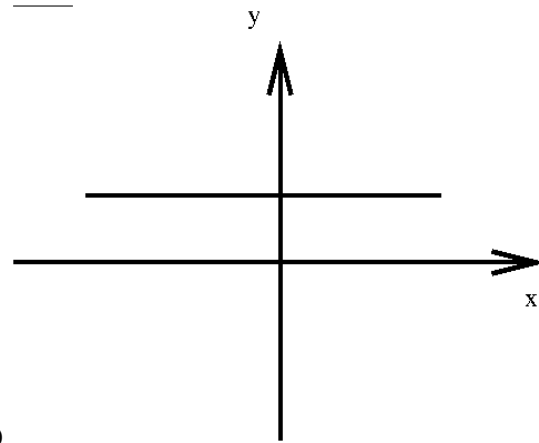
a)



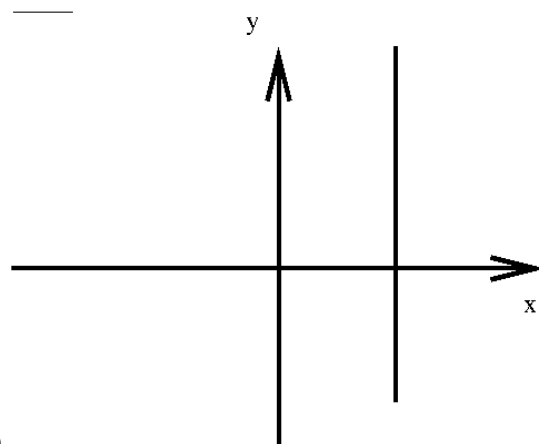
b)



c)



d)



e)

2. (1 pt) $f(x) = \frac{x}{21} + 18$ can be expressed in words as "Add 18, then divide by 21". Is this statement true?

Your answer is (input Yes or No): _____.

3. (1 pt) Given the function $f(x) = 2x^2 + 6x - 4$. Calculate the following values:

$f(0) =$ _____

$$f(2) = \underline{\hspace{2cm}}$$

$$f(-2) = \underline{\hspace{2cm}}$$

$$f(x+1) = \underline{\hspace{2cm}}$$

$$f(-x) = \underline{\hspace{2cm}}$$

4. (1 pt) Given the function $f(x) = 5 + 8x^2$, calculate the following values:

$$f(a) = \underline{\hspace{2cm}}$$

$$f(a+h) = \underline{\hspace{2cm}}$$

$$\frac{f(a+h)-f(a)}{h} = \underline{\hspace{2cm}}$$

5. (1 pt) Define a function $f(x)$ by:

$$f(x) = \begin{cases} 12 - 5x, & \text{if } x \geq 5 \\ 25 - x^2, & \text{if } x < 5 \end{cases}$$

$$f(8) = \underline{\hspace{2cm}}$$

$$f(3) = \underline{\hspace{2cm}}$$

Looking only at values of x to the left of 5, what would you expect $f(5)$ to be? $\underline{\hspace{2cm}}$

Looking only at values of x to the right of 5, what would you expect $f(5)$ to be? $\underline{\hspace{2cm}}$

Now for fun, try graphing $f(x)$...

6. (1 pt) List all real values of x such that $f(x) = 0$. If there are no such real x , type DNE in the answer blank. If there is more than one real x , give a comma separated list (e.g. 1,2).

$$f(x) = -5 + \frac{-8}{x+4}$$

$$x = \underline{\hspace{2cm}}$$

7. (1 pt) List all real values of x such that $f(x) = 0$. If there are no such real x , type DNE in the answer blank. If there is more than one real x , give a comma separated list (e.g. 1,2).

$$f(x) = \frac{17}{x-6} + \frac{12}{x-7}$$

$$x = \underline{\hspace{2cm}}$$

8. (1 pt) The remainder of the problems in this set are focused on the concept of a function.

Consider the function f defined by

$$f(x) = x^2 + 3x + 1$$

Then

$$f(1) = \underline{\hspace{2cm}}$$

$$f(-3) = \underline{\hspace{2cm}}$$

$$f\left(\frac{2}{3}\right) = \underline{\hspace{2cm}}$$

9. (1 pt) Let $f(x)$ be the function $\frac{x}{x+1} - 1$. Find the following:

$$f(4) = \underline{\hspace{2cm}}$$

$$f(-3) = \underline{\hspace{2cm}}$$

$$f\left(\frac{1}{10}\right) = \underline{\hspace{2cm}}$$

$$f\left(-\frac{1}{4}\right) = \underline{\hspace{2cm}}$$

10. (1 pt) Suppose

$$f(x) = x^2 + 1$$

and

$$g(x) = x + 1.$$

Then

$$(f+g)(x) = \underline{\hspace{2cm}},$$

$$(f-g)(x) = \underline{\hspace{2cm}},$$

$$(fg)(x) = \underline{\hspace{2cm}},$$

$$(f/g)(x) = \underline{\hspace{2cm}},$$

11. (1 pt) The next few problems are focused on the combination of functions: Suppose f and g are two functions. Then we define

- A. $(f+g)(x) = f(x) + g(x)$,
- B. $(f-g)(x) = f(x) - g(x)$,
- C. $(fg)(x) = (f \times g)(x) = f(x) \times g(x)$,
- D. $(f \div g)(x) = (f/g)(x) = \left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$,

Suppose

$$f(x) = 2x + 1$$

and

$$g(x) = x + 2.$$

Then

1. $(f+g)(x) = \underline{\hspace{2cm}}$,
2. $(f-g)(x) = \underline{\hspace{2cm}}$,
3. $(fg)(x) = \underline{\hspace{2cm}}$,
4. $(f/g)(x) = \underline{\hspace{2cm}}$,