

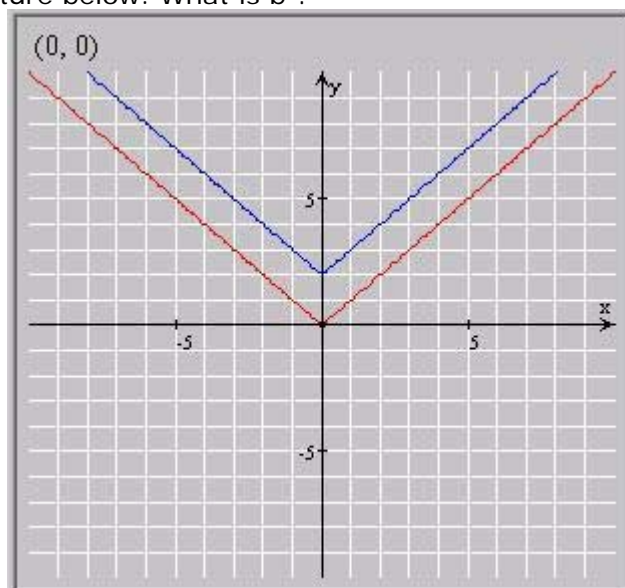
Lab on Functions

1. Partner (1 point)

Remember the laboratories in Math 128 are collaborative, so you should be talking about the questions with others around you. Pick someone sitting close to you who you will work with today. Enter the name of your partner below.

2. Vertical shift 3 (1 point)

Refer to lab page 2. Enter $f(x) = \text{abs}(x)$. Move the slider to make the graph match the picture below. What is b ?



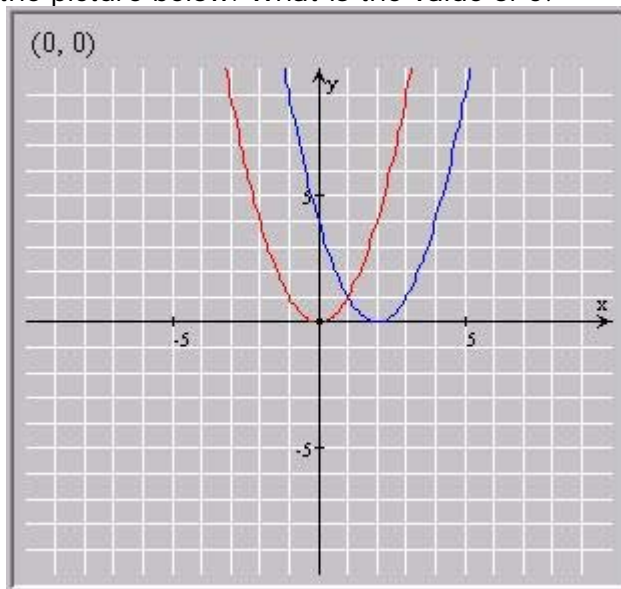
3. NaN (1 point)

Refer to lab page 2. Enter $f(x) = \text{sqrt}(x)$, to plot the square root function. Move the slider to $b = -2$. Set the table to provide automatic entries. Notice that some table entries are labeled NaN. "NaN" means "Not a Number." What do the x values have in common for the NaN entries? There are three correct choices to mark below.

- They are values not in the domain of the functions.
- They are values not in the range of the functions.
- They are values for which the functions are not defined.
- They are values which would require you to take the square root of a negative number.
- They are values that reveal symmetry with respect to the y axis.
- They are values that reveal symmetry with respect to the origin.

4. Horizontal shift 3 (1 point)

Refer to lab page 3. Set $f(x)=x^2$ and move the slider to make the graph look like the picture below. What is the value of c ?



5. Table pattern (2 point(s))

Refer to lab page 3. Set $f(x)$ to be a function of your choice (not a linear function, though) and turn on automatic x table entries. Move the slider to vary the function $g(x)$. Describe in a sentence or two the relationship between the table entries in column 2 ($f(x)$ values) and table entries in column 3 ($g(x)$ values). Which values in column 3 match up with which values in column 2?

Paragraph

6. Translation quiz (1 point)

Refer to lab page 4. Find the WebCT key by giving an equation for the translated curve. Enter the word below.

1.

7. Inverse functions (1 point)

Refer to lab page 5. The inverse function grapher first graphs a function that

you enter. Then the button labelled Graph inverse relation rotates the graph about the line $y=x$, which has the effect of interchanging the x and y coordinates of points on the curve. The result is the graph of the inverse relation. This relation is a function if the red graph satisfies the vertical line test, which happens if the original blue graph satisfies the horizontal line test. Graph the following functions, use the inverse grapher to graph the inverse relation. Mark all of the functions whose inverse relations are also functions.

- a. x^3+x
- b. x^3-x
- c. \sqrt{x}
- d. x^2
- e. $\text{abs}(x)$

8. Inverse linear (1 point)

Refer to lab page 5. Enter various linear functions, use the inverse grapher to plot the inverse, and note the slope of the inverse function. Make a conjecture about the relationship between the slope of the linear equation and the slope of its inverse.

- a. The inverse function has slope the negative of the slope of the original function.
- b. The inverse function has slope the same as the slope of the original function.
- c. The inverse function has slope the reciprocal of the slope of the original function.
- d. The inverse function has slope the negative reciprocal of the slope of the original function.
- e. The inverse function has a slope that does not depend on the slope of the original function.

9. Logo (1 point)

Refer to lab page 6. Graph $f(x) = \text{abs}(2-\text{abs}(x))$ and $g(x) = \text{abs}(x-2)-4$. What does the graph make you want to say?

- a. I'm lovin' it!
- b. An army of one.
- c. Like a rock!
- d. Let's gooooo, Mountaineers!
- e. GE--We bring good things to life!
- f. Fly the friendly skies!