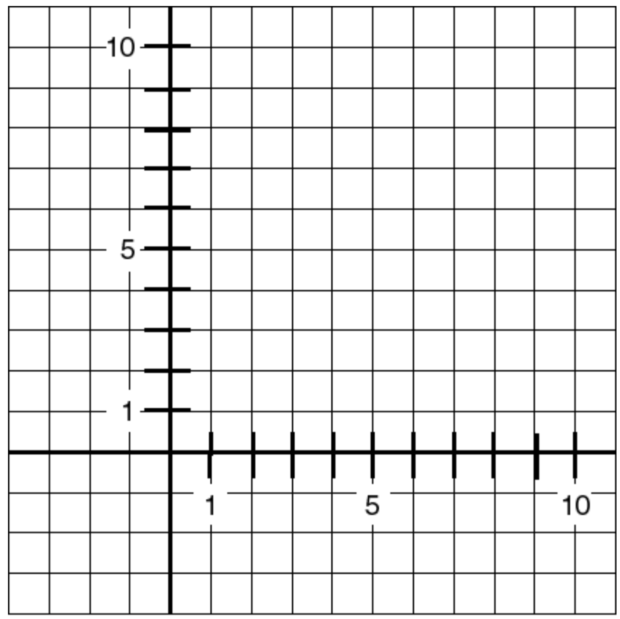
Math 119 NAME:
Inverses of Functions

1. Complete the table. Then plot the points (and connect them) to create a graph of the relationship $y = x^2 + 1$.

x	$y = x^2 + 1$
-3	
-2	
-1	
0	
1	
2	
3	

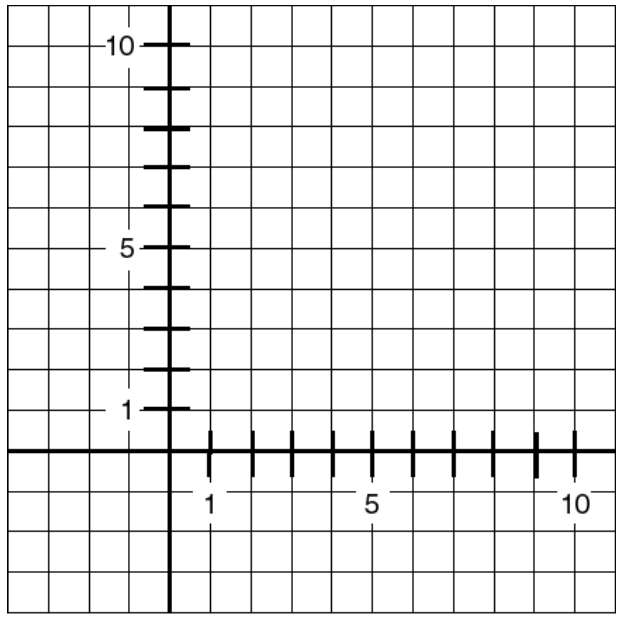


2. Describe in words the rule that assigns a y value to each x. (For instance, the rule for y = 3x + 4 would be "Multiply x by 3 and add 4 to get y".)

3. Now exchange the x and y values in your table. Then plot these points to draw the inverse of the original relationship.

Notice this graph is the reflection of the first graph over the y = x line.

x	**y**
	-3
	-2
	-1
	0
	1
	2
	3



4. Describe in words the rule that assigns a y value to each x. Notice the rule here undoes the rule of question 2.

5. a.) Is this inverse relationship a function?

b) How can you tell by looking at the graph?

c) How can you tell by looking at the table?

6. We are interested in functions whose inverses are themselves functions. How could we restrict the domain of the original function $y = x^2 + 1$ so that its inverse is a function? (There are many correct answers here.) Write your answer in interval notation.

7. Consider your restricted domain of $f(x) = x^2 + 1$. Using this f(x), algebraically find the equation for $f^{-1}(x)$.