

What Is A Function?

So, what exactly is a function? A function has one major property that separates it from other equations:

A function takes one number and maps it to a single, unique number. **It doesn't matter what other number it takes it to, as long as it is unique.**

The keyword is "unique". This means that if I have a function, $f(x)$, I can't have $f(2) = 3$ AND $f(2) = 6$. It has to be one or the other. 2 will get mapped to a **unique** number.

Let's say that our function decides to map 2 to 3. So, we have $f(2) = 3$. Does this mean that another number, say 5, can't also map to 3? No! We can also have $f(5) = 3$ for the same function.

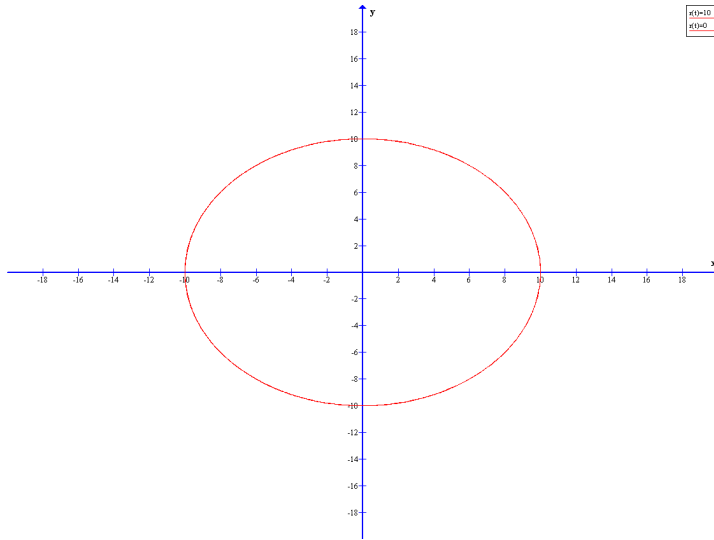
In other words, we can have two numbers map to the same number. But we can't have one number map to two numbers. Make sense? It might take a minute or two to digest the idea.

So, how do you tell what is a function and what isn't?

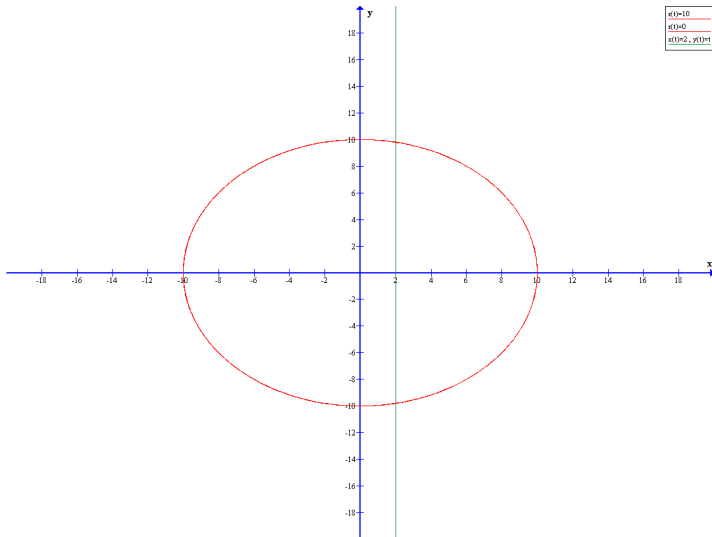
Well, if you know what the graph of the function looks like, you can do the vertical line test. Basically, the idea with this is that if you can place a vertical line somewhere on the graph that intersects the line in two or more places, then you don't have a function. If the vertical line always intersects the line in one or less places, you do have a function. This method of checking requires you to know the graph.

For example:

Does this represent a function?

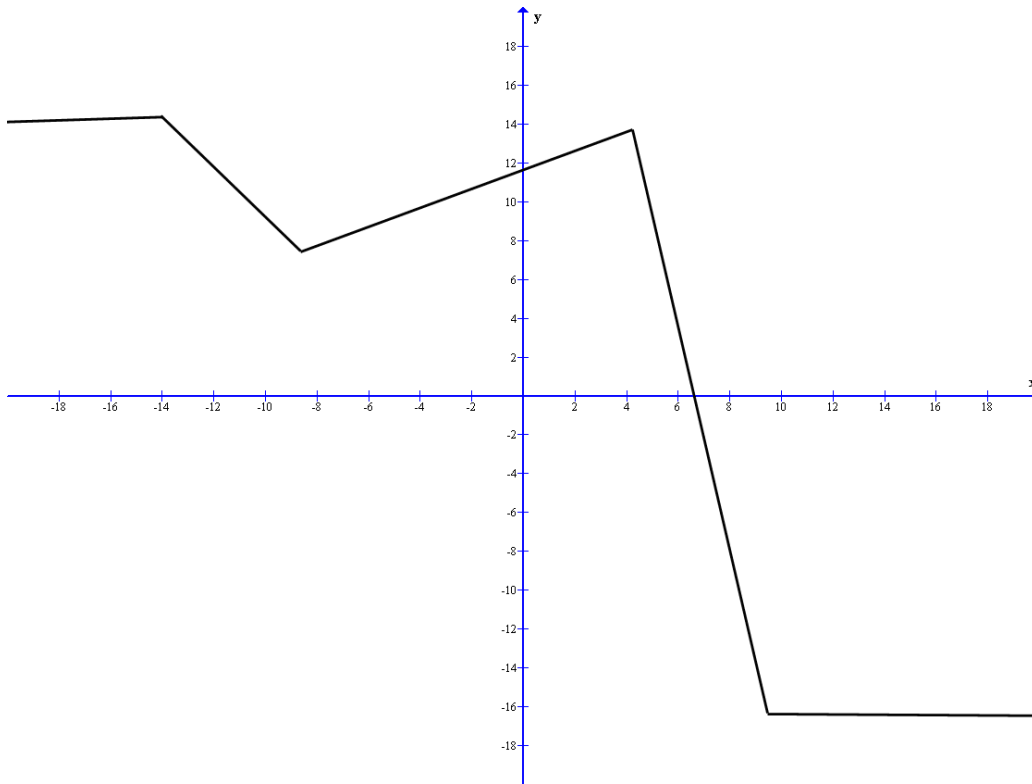


No. Since I can draw a vertical line that intersects the graph in two spots:

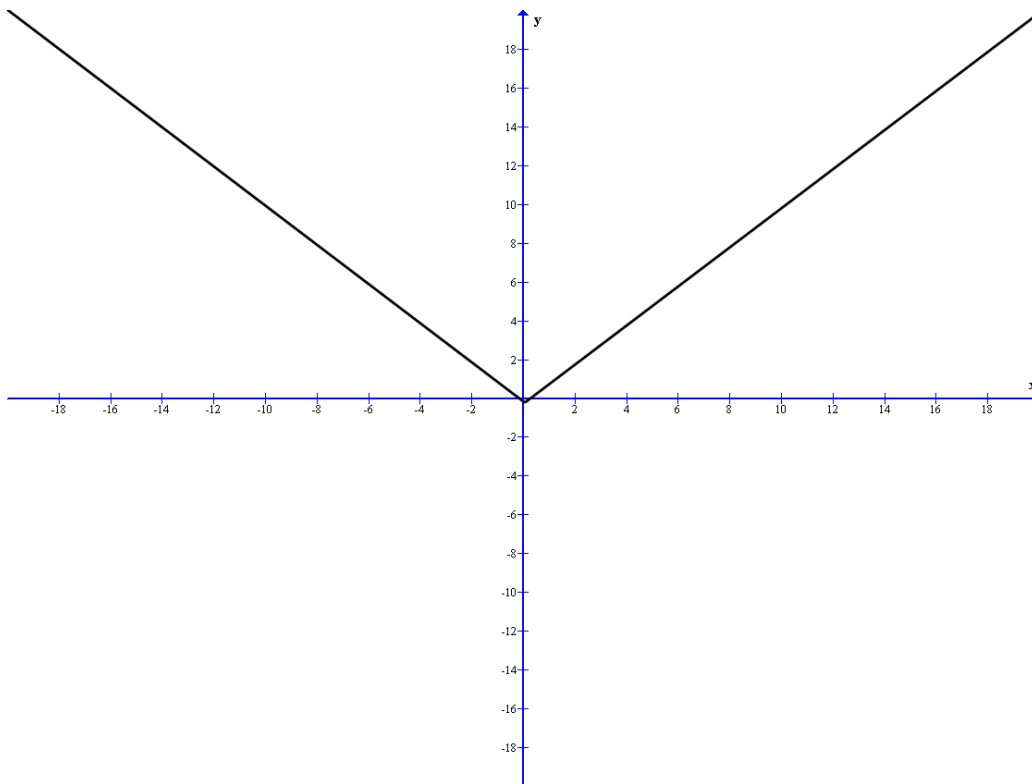


Now, use the vertical line test on these graphs to determine if they are functions:

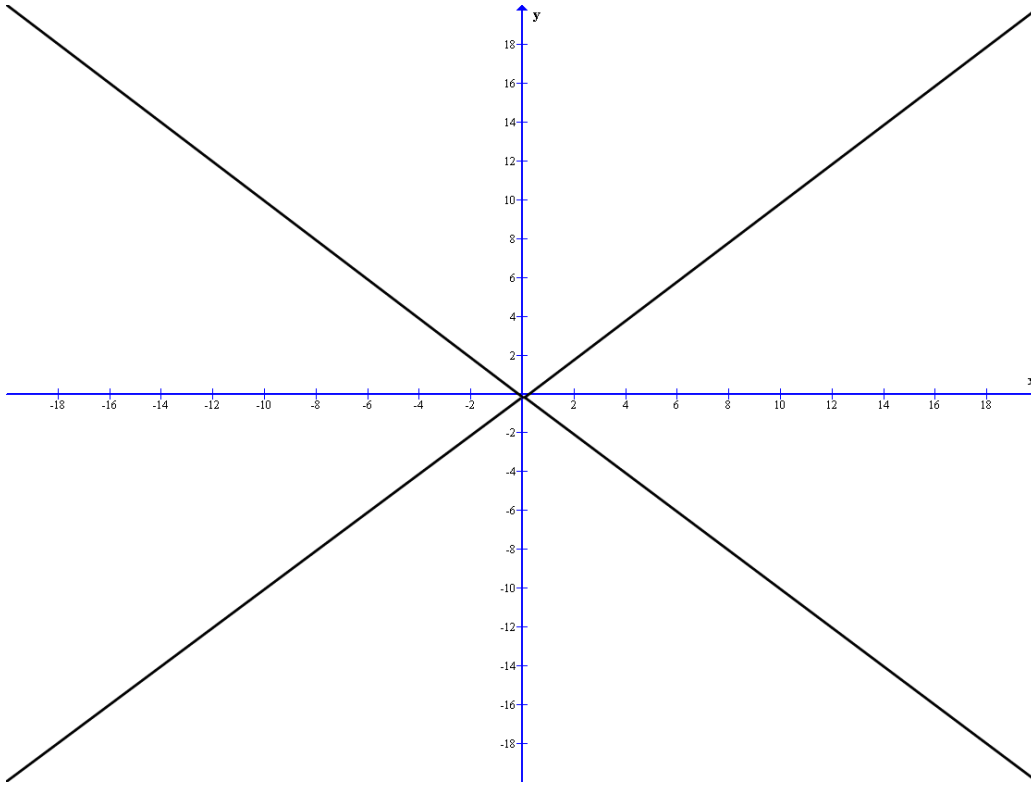
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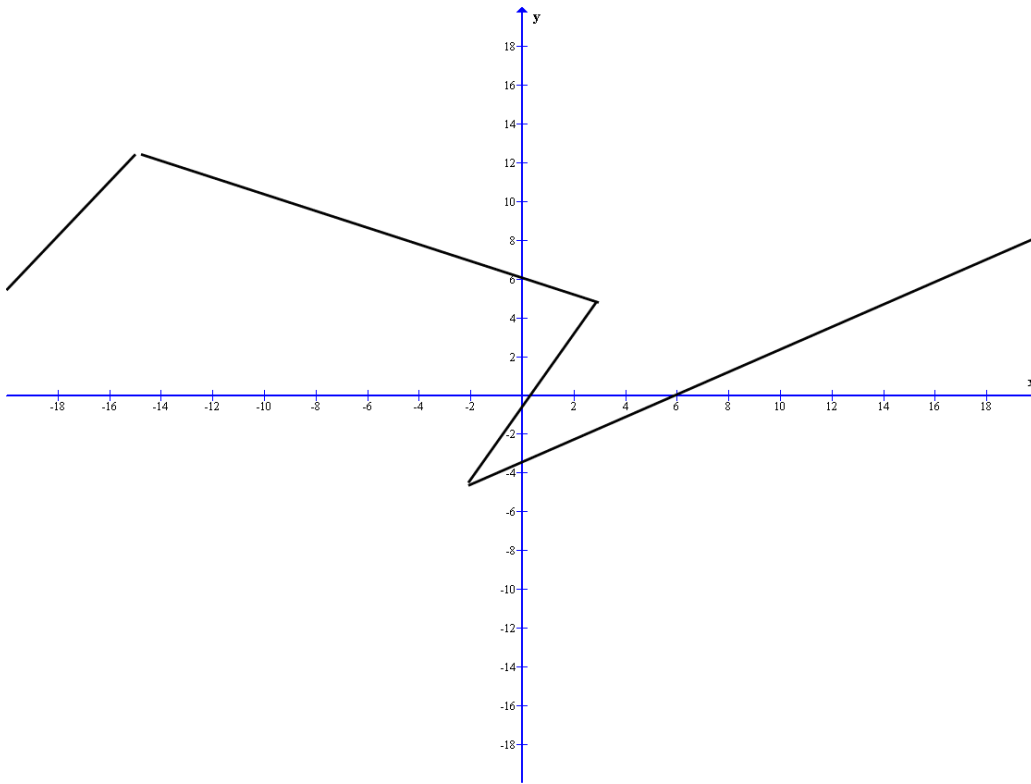
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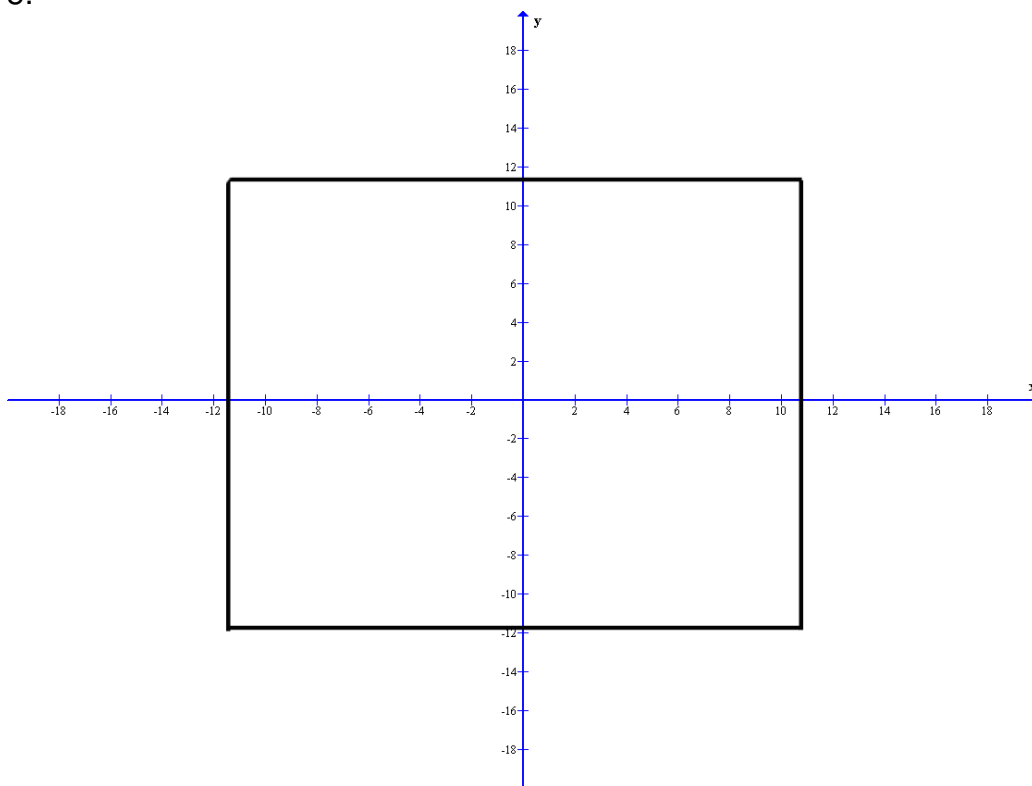
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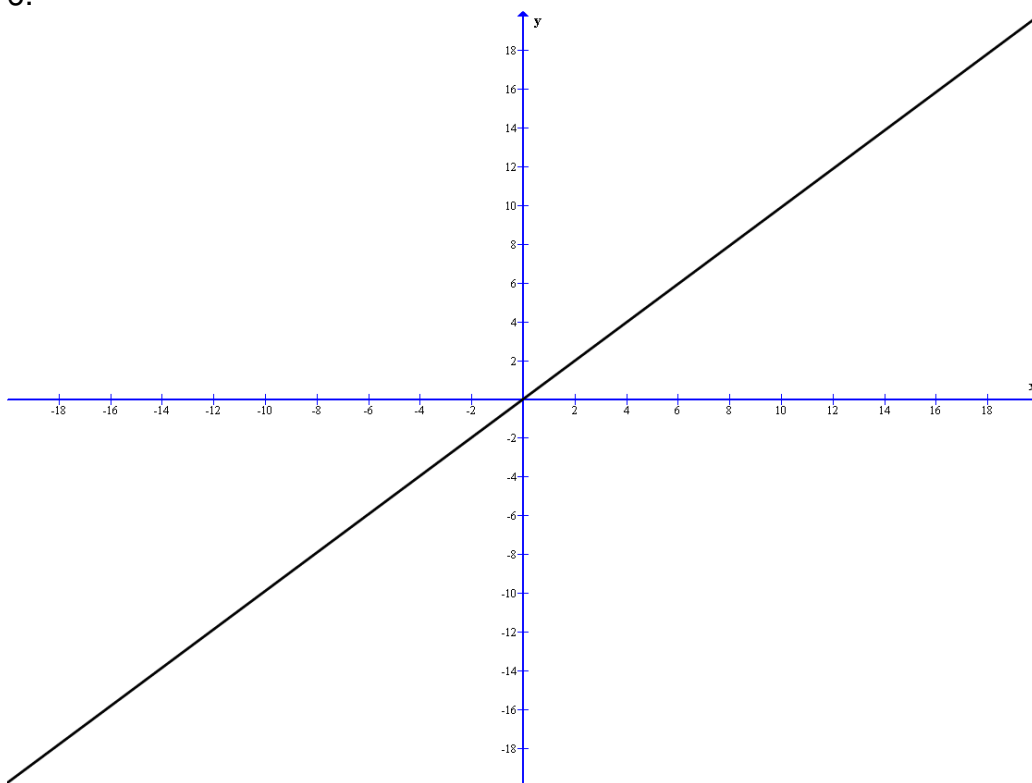
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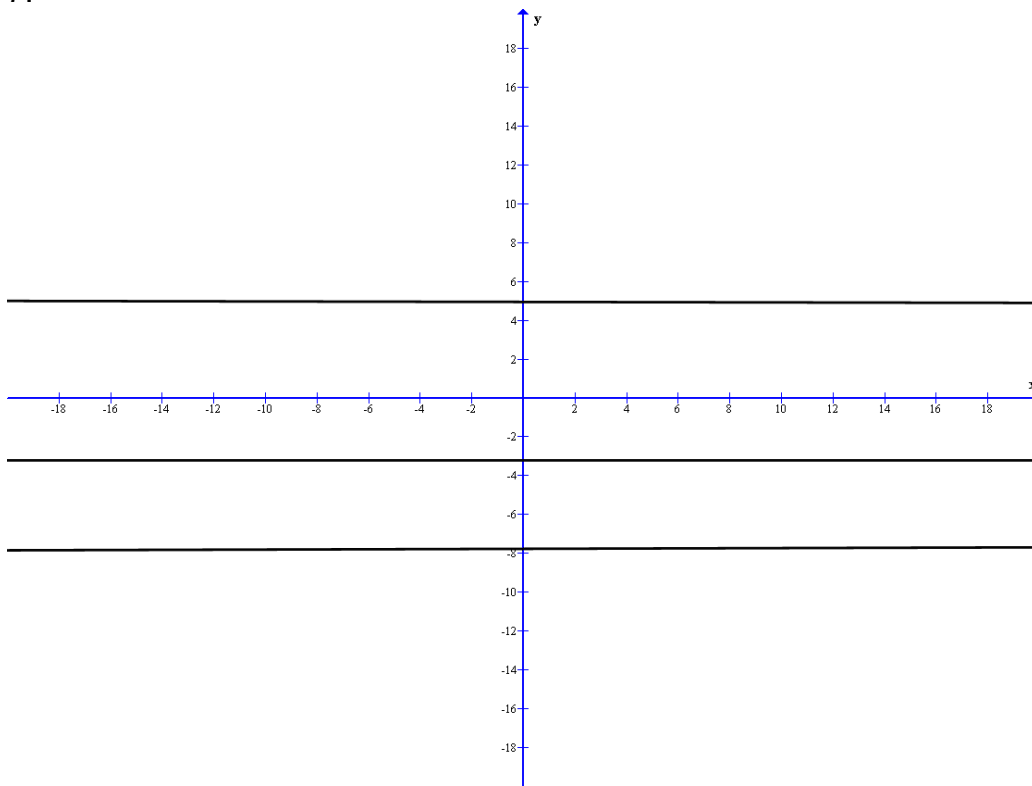
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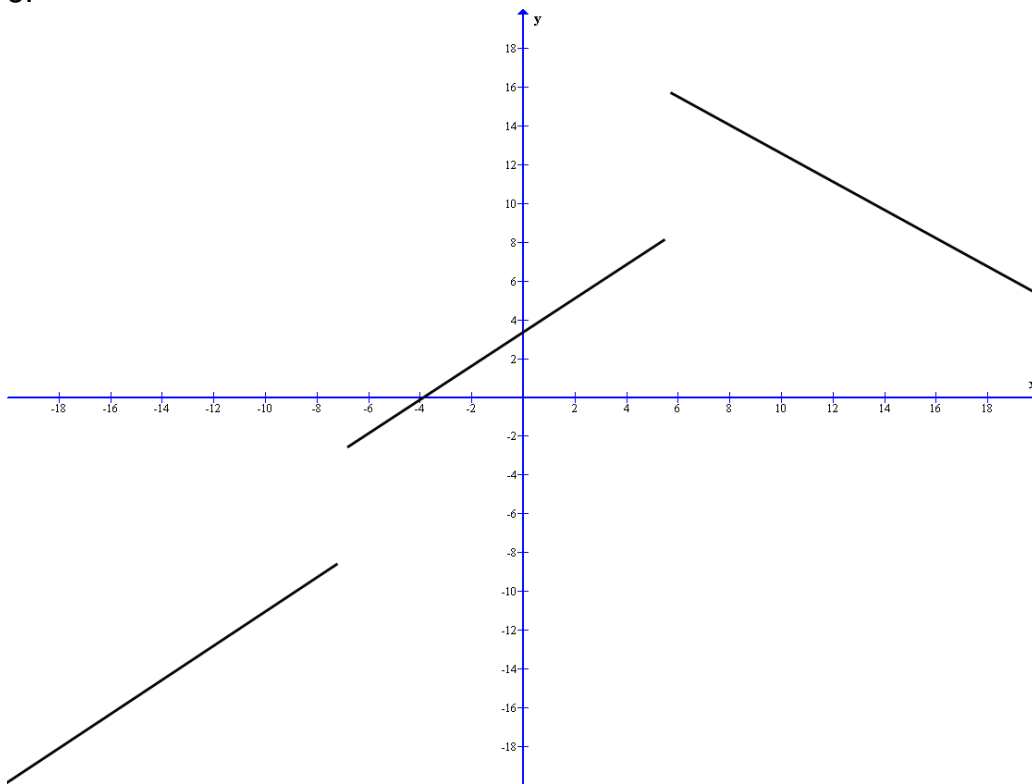
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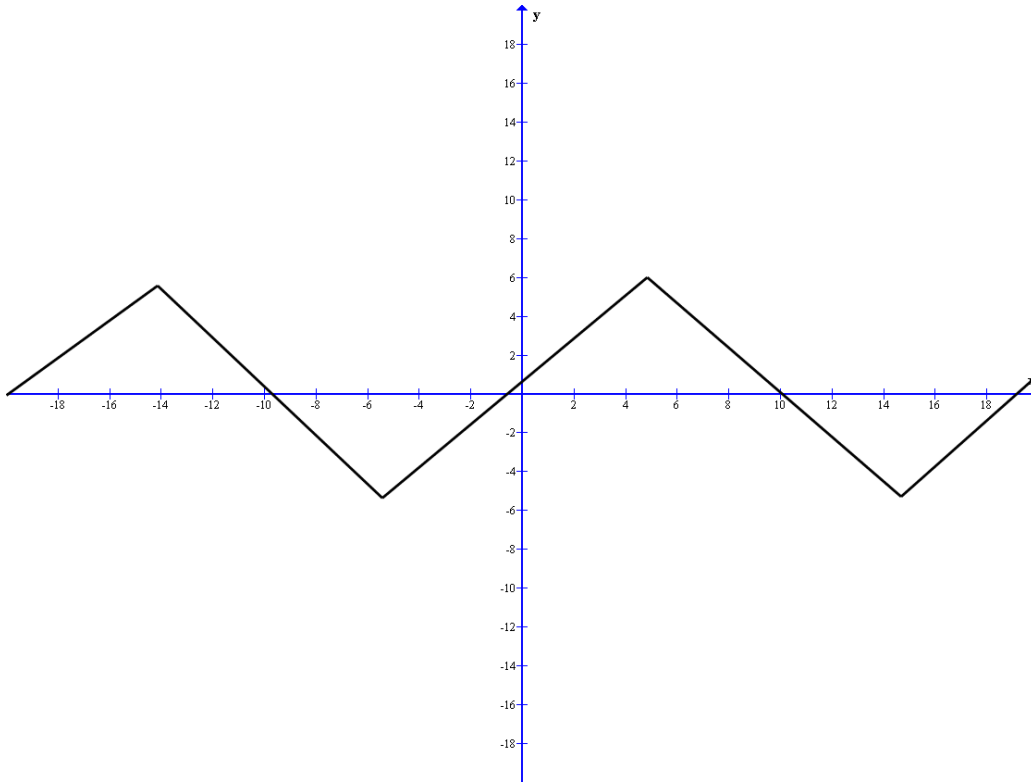
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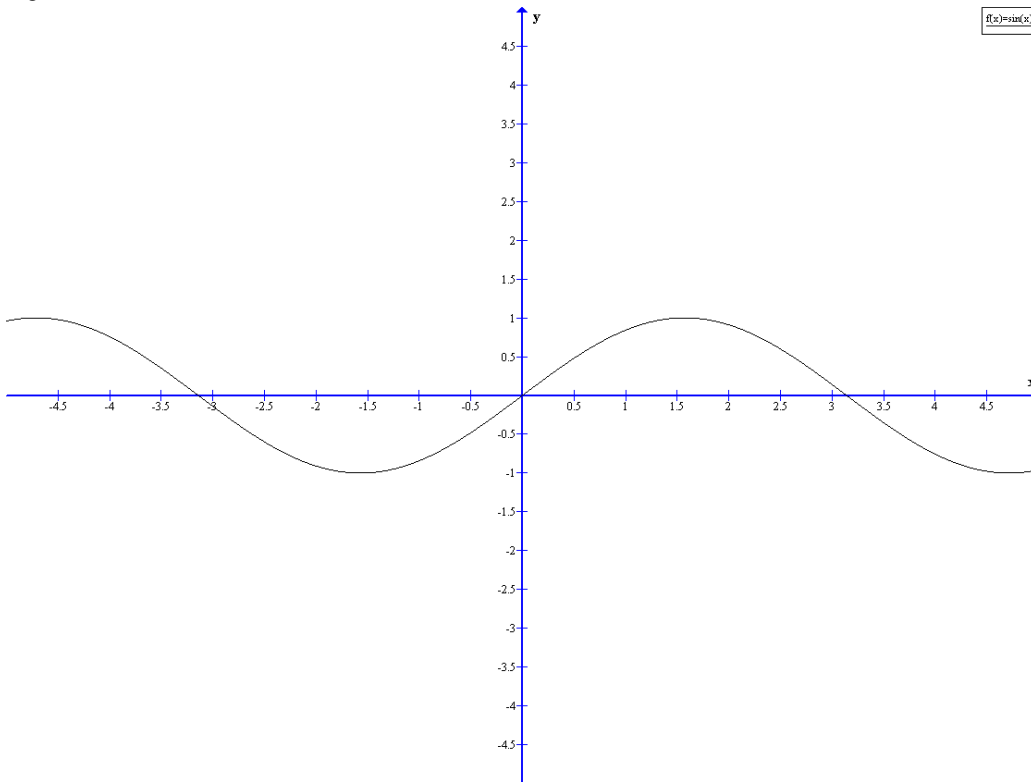
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9.



10.



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