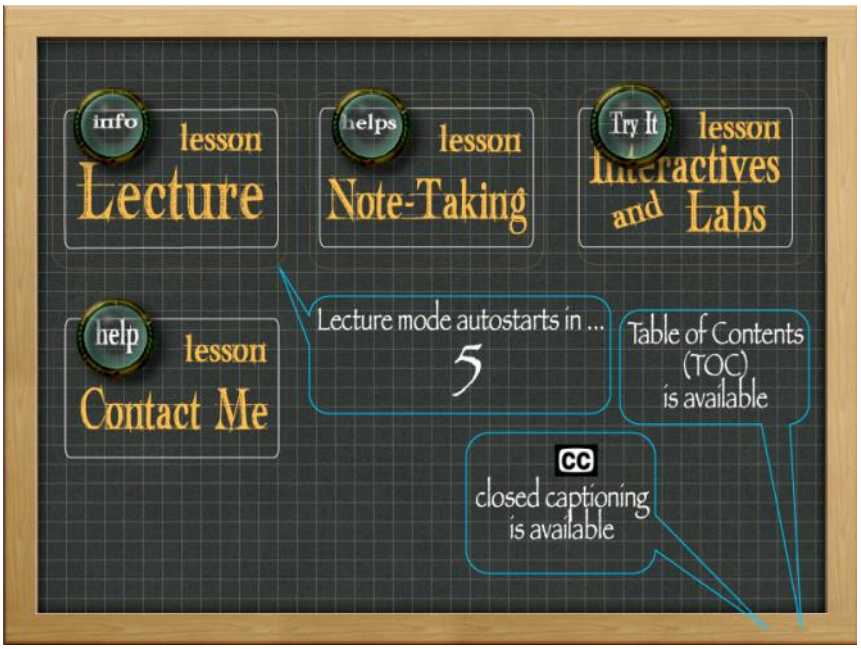
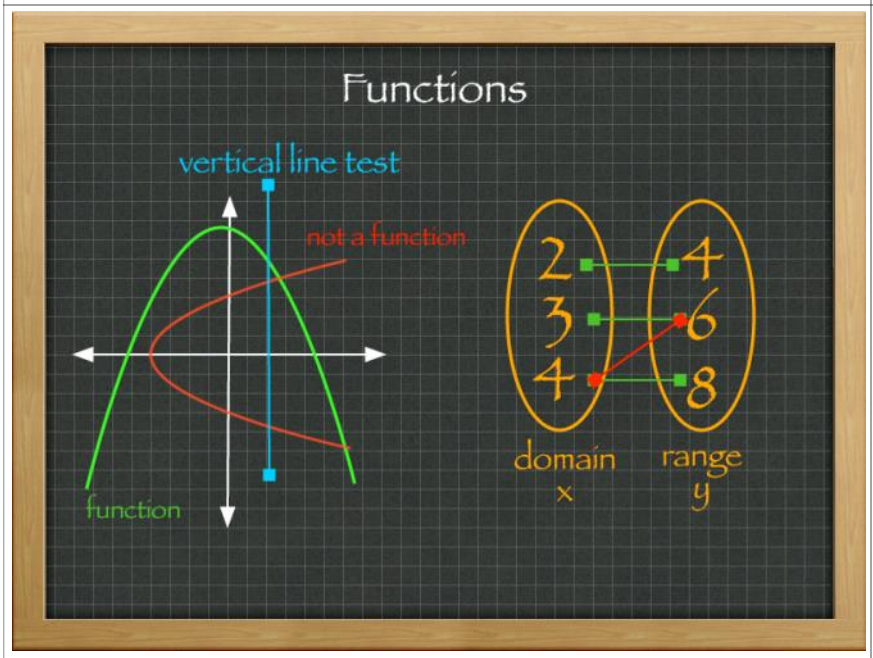
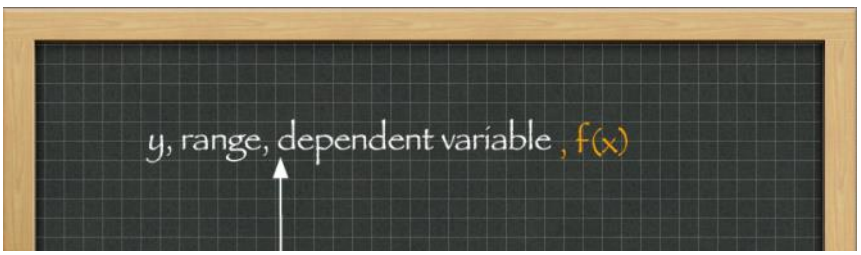
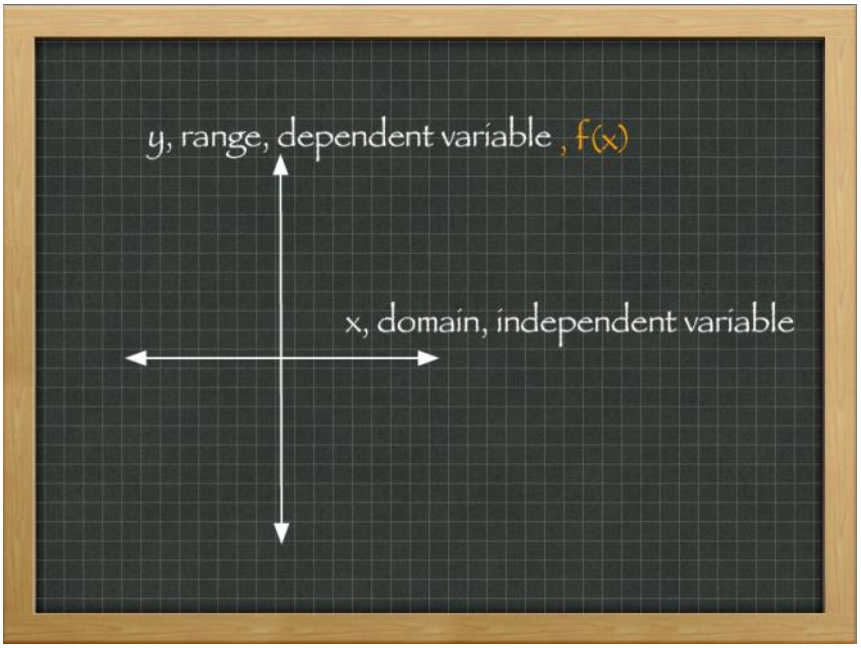
Functions and Functional Notation

Friday, November 15, 2013
10:33 AM

Slides	Notes
	
	Functions have only one value of y for any particular value of x. This parabola in green is a function. If you examine it, you can see that it is true that all the ordered pairs for possible values of x have just one unique value for y. If we turn it on its side, though, we no longer have a function. There areas many as two y values for some of the value of x. The red one is not a function. When we are working with graphs, there is an easy test for functions. It is the vertical line test. If a vertical line only passes through the graphed values once everywhere on the 'line', then it is a function. If it touches twice in any location, it is not one. You can be given sets of numbers too. If the value for x, or the domain, maps to only one y, you have a function. If any of the domains branch out to two or more ranges, or y, at the same time, it doesn't represent a function.
	You have already been hearing a few names given to the variables associated with the axes. The x-axis, besides being called the x-axis, is associated with the domain and also the independent variable. The y-axis, is associated with the range, dependent variable, and here is a new one for you: f of x. Actually, any letter can be where you see the f. This is called functional notation.



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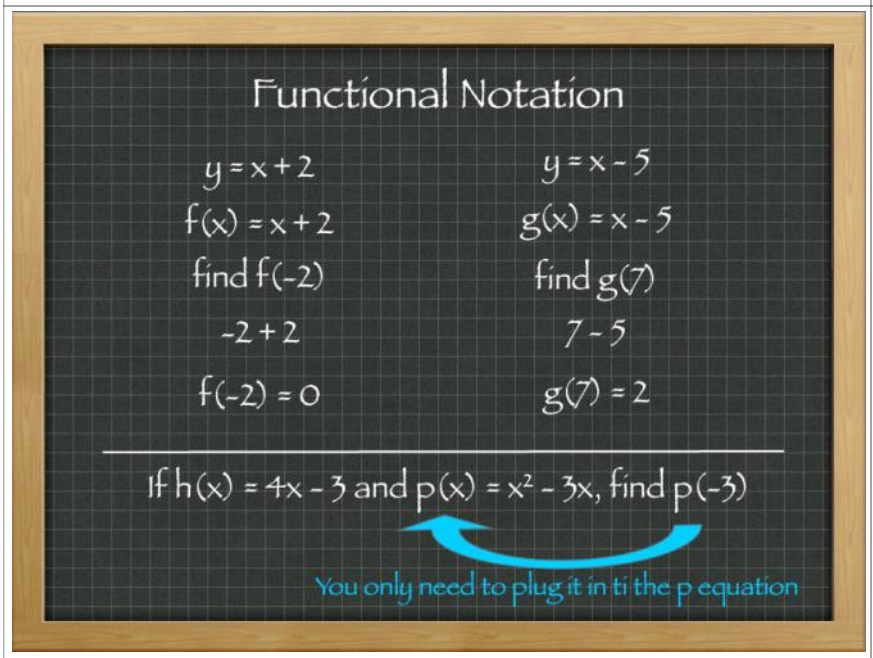
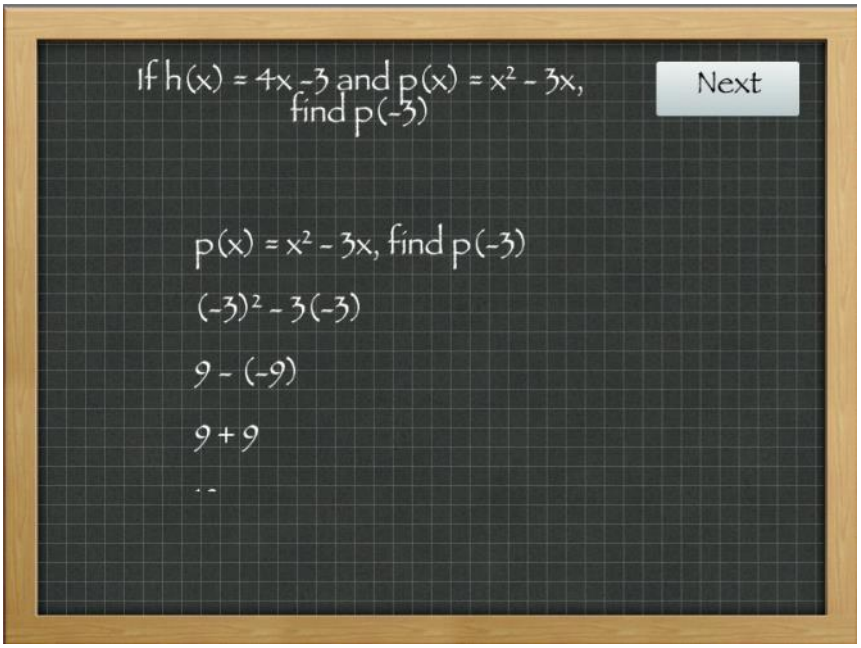


Let's look at what you are already familiar with. You have seen equations regularly in formats such as y is equal to x plus two or y = x minus five.

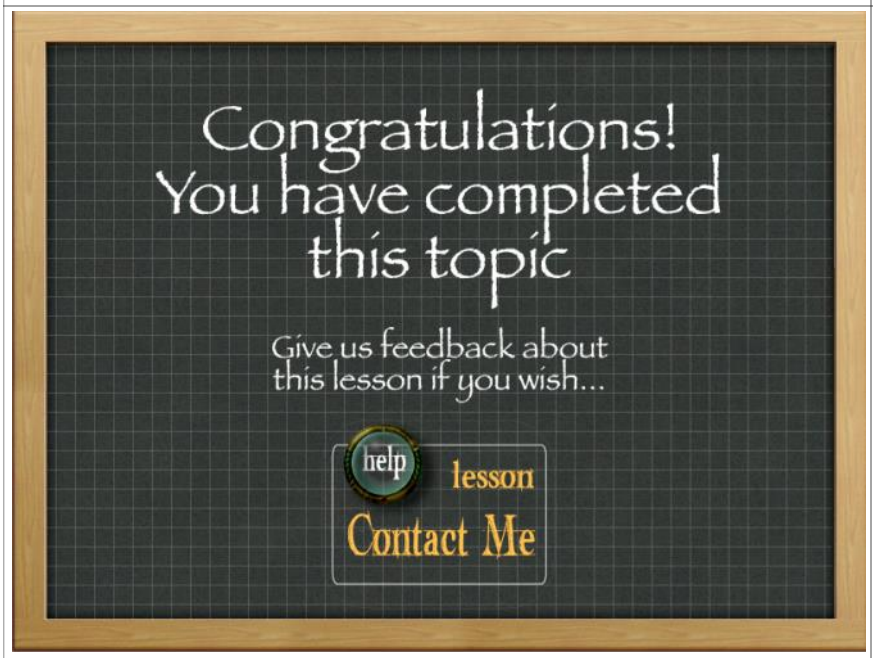
Here are the same equations in a format called functional notation. Some textbooks will use this notation all the time. In this text, it is introduced to you so you will realize how it works, but it will not be used heavily. When you get to college, it is possible you might have a text that uses this all the time, so you want to be sure to understand how it might differ.

All the f of x or g of x or whatever the letter of x really stands for is what you are used to seeing as y. You may find it helpful to mentally just replace the functional notation with the letter y until you get the hang of it.

Here is a typical problem you might be asked to solve. Notice that you are given two equations. The prompt to find p of -3 tells you to insert that value for x in the equation labelled p. You never even have to do anything with the equations labeled h.


If h(x) = 4x -3 and p(x) = x² - 3x, find p(-3)
Next
p(x) = x² - 3x, find p(-3)
(-3)² - 3(-3)
9 - (-9)
9 + 9

Try It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