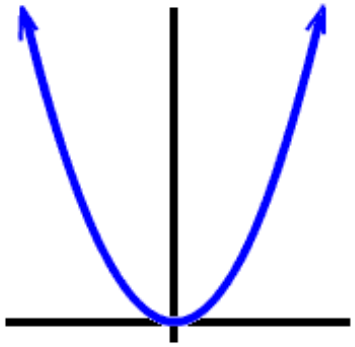
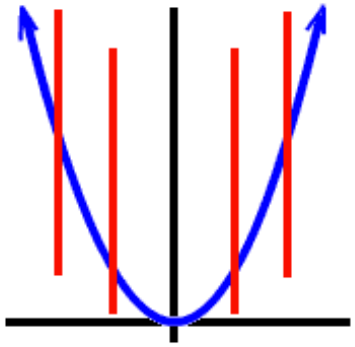
If we've got the picture of a critter (i.e. the graph), there's an easy way to tell if it's a function or not.

It's called THE VERTICAL LINE TEST:

> If you can draw a vertical line anywhere on a graph so that it hits the graph in more than one spot, then the graph is NOT a function.

Check out Standard Parabola Guy:





No matter where we drop a vertical line, it only hits the parabola in one spot.

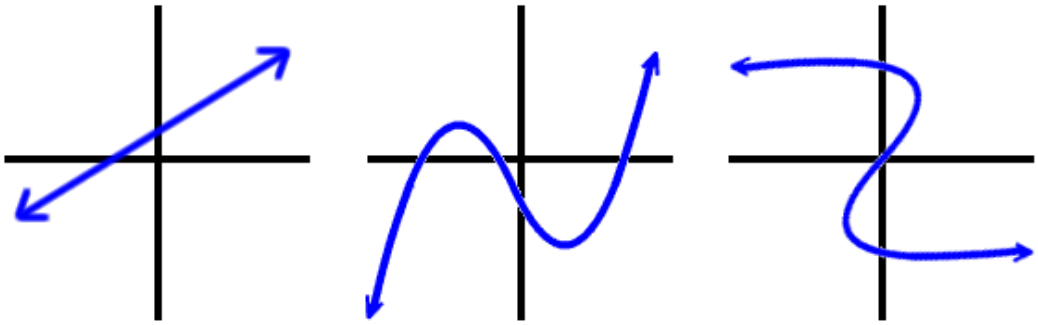
So, Standard Parabola Guy is a function!

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

a number goes in

and its square spits out

**Which of these are functions?**



**The first two are... The first guy is just a line. He's officially called a linear function.**

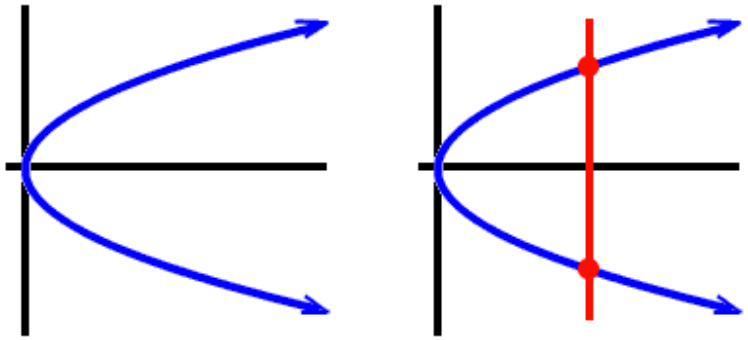
**What's the only type of line that isn't a function? _____**

**The second guy passes the vertical line test, so it's a function.**

**The last guy fails the vertical line test and is not a function.**

**What about a parabola lying on its side?**

**(I'll teach you about these later.)**



**Ouch! This guy hits in two spots!**

**So, Sideways Parabola Guy is not a function.**

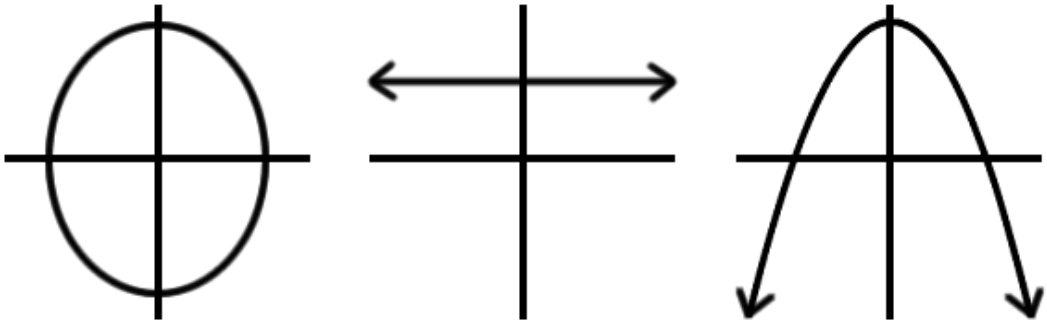
**The only problem with this method is that you don't always have a picture to look at.**

**(There are other ways to tell that I'll show you later.)**

**Which of these are functions?**

**YOUR TURN:**

**Which of these are functions?**



**Which of these are functions? Draw rough sketches of the graphs so you can do the vertical line test:**

$$y = -\frac{2}{3}x + 4$$

$$y = 5x - x^2$$

**What about these?**