Exploring quadratic functions (7.1)

Follow the instructions laid out in this worksheet and post your answers in a blog post. Use [www.desmos.com](http://www.desmos.com) to answer the questions below.
**Due: Wednesday Sept 26th**
Title: Exploring quadratic functions
Categorize: Math 11
Tag: quadratics, pahlevanlu

1. **Find and write the definition of a quadratic function in words you understand. (use your textbook, google, etc)**

A polynomial function in one or more variables in which the highest-degree term is of the second degree.

1. **Give an example of a quadratic function**

y=3x2+8x-5

1. **Give an example of a function that is NOT a quadratic.**

y=8x-5

1. **Go to desmos.com and type in the following function:** $y=ax^{2}+bx+c$
	1. **Desmos will give you the option of adding “sliders” for** $a, b, c$ **or all. Click all. This will allow you to change the values of** $a, b, c$ **to see how the graph changes.**
	2. **Start with slider values** $a=1, b=0, c=0$**. Describe any symmetry you notice.**

The lines are symmetrical, they both have the same amount of room on each side of the y axis

1. **Keep b = c = 0. Change the value of** $a$**:**
	1. $a<0$
		1. **Does the graph open up or open down?**

Opens up

* + 1. **Does the graph have a maximum point or minimum point?**

****Maximum point

* 1. $a>0$
		1. **Does the graph open up or open down?**

Opens down

* + 1. **Does the graph have a maximum point or minimum point?**

Minimum point

* 1. $-1<a<1$
		1. **Is the graph narrow or wide?**

Widens

* 1. $a>1 or a<-1$
		1. **Is the graph narrow or wide**

Narrows

1. **We call the maximum or minimum point** $(x,y)$ **of a quadratic function the vertex. Complete the following statements:**
	1. When $a$ is positive, the vertex is a minimum
	2. When $a$ is negative, the vertex is a maximum
2. **Let** $a=1$ **and** $b=0 $**constant. Use the slider to change the value of** $c. $**Describe how the graph changes as** $c $**changes.**

The bottom of the parabola moves up and down the y axis

**Roots are the solutions to the quadratic equation.  The roots are found by looking at where the curve crosses the x axis (x-intercepts).**

**Adjust the sliders for a, b and c so you can get a curve that just touches the x axis (y=0).**

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              Equation: \_\_\_\_y=8x2+0x + 0\_\_\_

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**This quadratic equation has ONE solution.**

**Adjust the sliders so you can get the roots of 0 and -1**

              Equation: \_\_\_\_\_y=8x2+4x+0 \_

**This quadratic equation has TWO solutions.**

**Adjust the sliders so that the curve does NOT cross the x-axis.**

              Equation:  \_\_\_\_\_\_y=8x2+0x+3\_\_\_\_\_\_\_\_

When the curve does NOT cross the x-axis, there are NO REAL solutions for this equation.