**The Zeros of a Quadratic Function**

**Example 1:** Draw three parabolas that open up– one with 2 zeros, one with 1 zero and one with no zeros.

**Example 2:** Draw three parabolas the open down – one with 2 zeros, one with 1 zero and one with no zeros.

**Example 3:** Investigate the three functions given below

* PUT THEM IN VERTEX FORM – HOW MANY ZEROS SHOULD THE FUNCTION HAVE ACCORDING TO VERTEX FORM?
* USE QUADRATIC FORMULA TO FIND THE ZEROS
* WHAT PART OF QUADRATIC FORMULA DETERMINES HOW MANY ZEROS?

The **DISCRIMINANT**:

=0 1 root (1 zero)

>0 2 roots (2 zeros)

< 0 no roots (NO zeros)

**Example 4:** Determine the value of *k* so that the quadratic function

 has 1 root

 **Example 5:** A company determines that its profit function is represented by . Will it be possible for the company to break even?