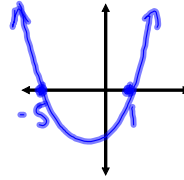Predicting the Number of Roots of Quadratics Apr. 20/2011

Recall: For a quadratic relation
       roots = zeroes = x-intercept = solutions

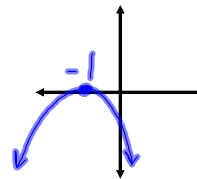Given factored form, it is easy to determine the roots:

Ex.1 $3(x - 1)(x + 5) = 0$

There is/are __2__ root(s)
The roots are __1__ and __-5__

Ex.2 $y = -2(x + 1)^2$

There is/are __1__ zero(es)
The zeroes are __-1__ and __-1__

Given vertex form, look at:
    - the location of the vertex (above/below x-axis?)
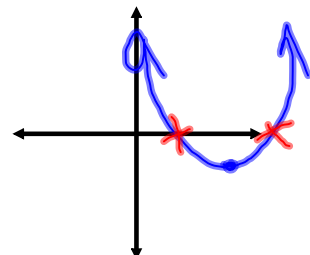   - the direction of opening (up/down?)

Ex.3 $y = 3(x - 5)^2 - 1$

V(5 , -1)

The vertex lies **above/below?** the x - axis.

The parabola opens **up/down?**

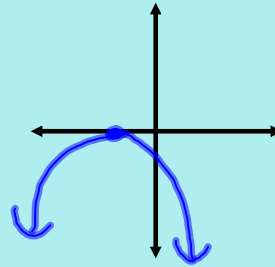There is/are __2__ zero(es)

To find the zeros set y = 0 and solve

Ex.4 $y = -2(x + 1)^2$

V(-1 , 0)

The vertex lies on the x - axis

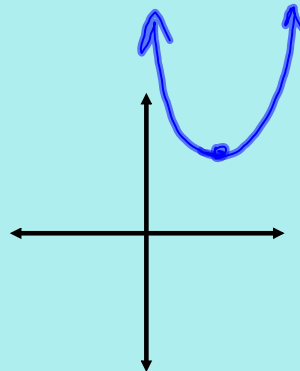there is/are ___1___ zero(es).

Ex.5 $y = 3(x - 5)^2 + 6$

V(5 , 6).

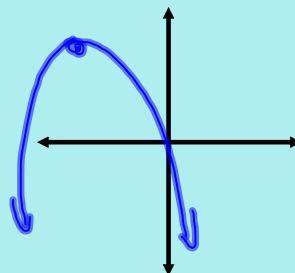above/below? the x - axis

opens up/down?

There is/are __0__ zero(es)

Ex.6 $y = -0.5(x + 3)^2 + 11$

V(-3 , 11).
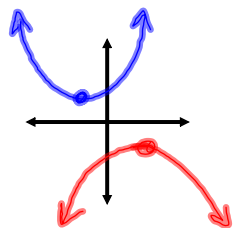
above/below? the x - axis

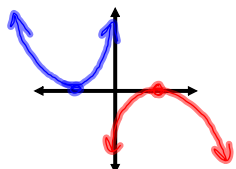opens up/down?

There is/are __2__ zero(es)

In general to identify the zeros from vertex form:

There will be 0 zeroes if the vertex is _above_ the x-axis
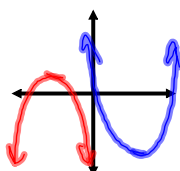
and the parabola opens _up_

OR if the vertex is _below_ the x-axis

and the parabola opens _down_

There will be 1 zero if the vertex is _on_ the x-axis

There will be 2 zeroes if the vertex is _below_ the x-axis

and the parabola opens _up_

OR if the vertex is _above_ the x-axis

and the parabola opens _down_

Apr 15-1:16 PM

Assigned Work:

p.350 # 4

Apr 19-8:15 PM