Journal Quest: Vertex Finding

Using the example: $y = 4x^2 - 4x - 3$, explain how to find the vertex by

    a) factoring

    b) graphing

    c) completing the square

In all cases, explain the details of every step of your solution.

4.4 The Quadratic Formula

What's it for?　　　　What is required?　　　　How does it work?

So what is the formula?

From standard form, you can use the quadratic formula to determine the number of zeros.

Ex. How many zeros are there for the following functions:

a. $f(x) = 2x^2 - 3x - 5$

b. $g(x) = 4x^2 + 4x + 1$

c. $h(x) = -5x^2 + x - 2$

The value of the discriminant, $b^2 - 4ac$, is enough to tell you the number of zeros for a quadratic equation.

Value of the discriminant	Number of zeros/solutions
$b^2 - 4ac > 0$	
$b^2 - 4ac = 0$	
$b^2 - 4ac < 0$	

Ex. For what value(s) of k will the function $f(x) = kx^2 - 4x + 1$
have no real roots, and one root, and two roots?