5.5 The Quadratic Formula

Ex. 1 Find the roots/zeroes/x-int of $y = 2x^2 - 11x + 5$.

Can you find the zeroes of $y = 2x^2 + 9x + 6$?

The equation cannot be factored BUT you can see it has two zeroes. We need another method for finding the zeroes. We need the QUADRATIC FORMULA!

Ex. 2 Find the zeroes of $y = 2(x - 1)^2 - 18$.

Solve for x by completing the square $2x^2 - 11x + 5 = 0$.

To derive the Quadratic Formula solve for x if $ax^2 + bx + c = 0$ by completing the square!

To find the roots when the equation is in standard form and DOES NOT factor use:

The Quadratic Formula:

For $ax^2 + bx + c = 0$,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$b^2 - 4ac$ is called the DISCRIMINANT

Ex. 3 Solve. Give EXACT solutions then decimal approximations.

a) $0 = x^2 - 3x + 1$

b) $2x(x - 3) = 7$

Ex. 4 Solve each of the following using the quadratic formula:

$2x^2-5x-1 = 0$ $x^2 - 30x + 225 = 0$ $3x^2+2x + 15 = 0$

Is there an easier way to determine the number of zeroes?