Math 1050 ~ College Algebra
6.5 Supplemental Video

Completing the Square

For a good explanation of how to complete the square, see
http://www.mathsisfun.com/algebra/completing-square.html
This is useful in solving a quadratic equation and in putting that equation in standard form.

EX 1

Solve by completing the square.

1a)

$x^2 - 6x - 3 = 0$

1b)

$3x^2 - 6x - 9 = 0$

1c)

$2x^2 - 5x + 4 = 0$

EX 2

Put these equations in standard form. $y = \mathrm{a}(x - \mathrm{h})^2 + \mathrm{k}$

2a)

$$y = x^2 + 2x - 2$$

2b)

$$y = 2x^2 - 4x - 3$$

2c)

$$y = -1/2x^2 - 3x + 5$$

Deriving the Quadratic Formula

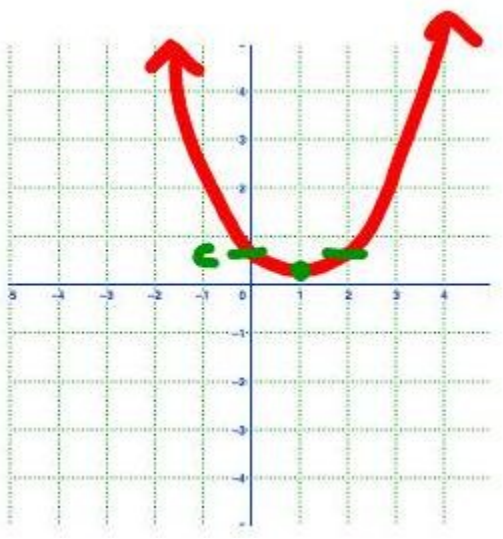
If $ax^2 + bx + c = 0, a \neq 0$, then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.

EX 3

Solve this equation for x, if a, b and c are constants.
$ax^2 + bx + c = 0$

Deriving the Formula for the Vertex

The vertex of $f(x) = ax^2 + bx + c$ is at the point $\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$.



EX 4

Determine the vertex for each of these using the above method.

4a)

$$y = x^2 + 2x - 2$$

4b)

$$y = 2x^2 - 6x - 3$$

4c)

$$y = -1/2x^2 - 3x + 5$$