

The "Discriminant" :

Using it to tell the number of zeros (x-intercepts)

$$\overset{\substack{\uparrow \\ \text{zeros}}}{x} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$\Delta = b^2 - 4ac$$

IF  $\Delta = - = \text{No zeros}$

$$\Delta = 0 = 1 \text{ zero}$$

$$\Delta = + = 2 \text{ zeros}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = 0$$

$$x = \frac{4 \pm \sqrt{0}}{2}$$

$$= \frac{4 \pm 0}{2}$$

$$\frac{4+0}{2} = \frac{4}{2} = 2$$

$$\frac{4-0}{2} = \frac{4}{2} = 2$$



$$x = 2$$

$\Delta$	Zeros
-	none
0	1
+	2