

The Discriminant

In the quadratic formula the expression under the square root sign is the **discriminant**

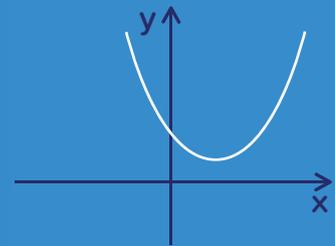
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

The value of the discriminant is negative

$$b^2 - 4ac < 0$$

The quadratic has no solutions.

The parabola does not cross the x-axis.

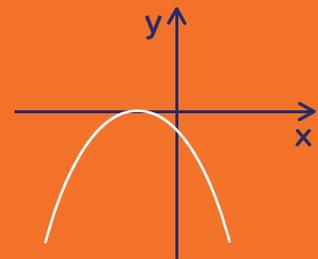


The discriminant is equal to zero

$$b^2 - 4ac = 0$$

The quadratic has one repeated solution.

The x-axis is a tangent to the parabola.



The value of the discriminant is positive

$$b^2 - 4ac > 0$$

The quadratic has two solutions.

The parabola crosses the x-axis twice.

