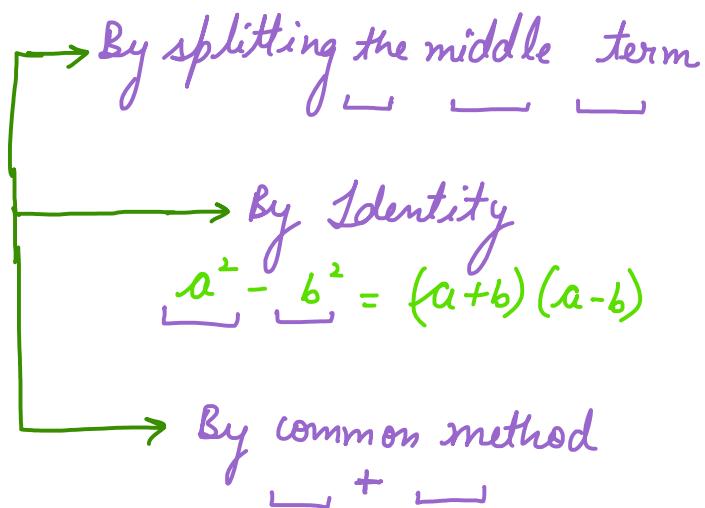


## 4 Quadratic Equations

Standard form:-

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

Solve:- (i) By factorisation method



(ii) By completing the square method

(iii) By quadratic formula.

## Completing the Square Method

1. Divide the equation by coefficient of  $x^2$
2. Half the coefficient of  $x$  ( $\times \frac{1}{2}$ )
- 3.) Constant term  $\rightarrow$  RHS
- 4.)  $(\text{Square})^2$  and add both sides.
- 5.) Complete the Square Identity.  $\begin{cases} a^2 + 2ab + b^2 = (a+b)^2 \\ a^2 - 2ab + b^2 = (a-b)^2 \end{cases}$

## Quadratic Formula

Discriminant  $D = b^2 - 4ac$   $(ax^2 + bx + c = 0)$

Nature of Roots :-

- $D > 0$ , It has 2 distinct real roots
- $D = 0$ , It has 2 equal real roots
- (-ve)  $D < 0$ , It has no real roots.

## Quadratic Formula

$$x = \frac{-b \pm \sqrt{D}}{2a}$$