

EQUATION

Linear Equation

- One Variable
- Two Variable
- Three Variable

- Elimination
- Substitut
- Cross Multiplication
- GI BC

Types of Lines

- Intersecting
- Parallel
- Coincide

Conditions

- Irrational and Imaginary Roots occur in pair
- Reciprocal Roots $c = a$
- Roots Equal but opposite in sign $b = 0$

Any Information About Roots

- Sum of Roots $\alpha + \beta = -b/a$
- Product of Roots $\alpha\beta = c/a$

Cubic Equation

- GI BC
- Trial & Error
- Synthetic Division

Quadratic Equation

- Factorization Method
- Formula $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
- Shortcut
- GI BC

Roots find out

Symmetric Function

Equation Given

$\alpha + \beta = -\frac{b}{a}$ $\alpha\beta = \frac{c}{a}$

- Relation Given
- Formation of New Eqn.

Convert into $\alpha\beta, \alpha + \beta$ form

Formation of Equation

$x^2 - Sx + P = 0$

Nature of Roots

$D = b^2 - 4ac$

- Real
 - Equal $D = 0$
 - unequal $D > 0$
- imaginary $D < 0$

Perfect Square

Rational

Not a Perfect Square
Irrational

$\alpha + \beta = \frac{-(\alpha + \beta) - 2\alpha\beta}{2}$
 $\alpha - \beta = \frac{\sqrt{(\alpha + \beta)^2 - 4\alpha\beta}}{2}$
 $\alpha^3 + \beta^3 = (\alpha + \beta)^3 - 3\alpha\beta(\alpha + \beta)$