

# TURBO

*Created by students, for students*

## QUADRATIC EQUATIONS

Class 11 Mathematics • Complete Formula Sheet

Sr.	Concept	Formulas	Other Information
FUNDAMENTALS			
1	Standard Form	$ax^2 + bx + c = 0$	Condition: $a \neq 0$ .
2	Nature of Roots	$D = b^2 - 4ac$ $D > 0 \Rightarrow 2$ distinct real roots $D = 0 \Rightarrow 2$ equal real roots $D < 0 \Rightarrow 2$ complex roots	$D$ is the Discriminant.
3	Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	Used to find roots directly.
4	Roots & Coefficients	$\alpha + \beta = -b/a$ $\alpha\beta = c/a$	For roots $\alpha$ and $\beta$ .
5	Formation	$x^2 - (\alpha + \beta)x + \alpha\beta = 0$	Form equation from given roots.
TYPES & GRAPHS			
6	Special Types	Pure: $bx = 0$ Factorizable: Solvable by factors Completing the Square	Methods for solving.
7	Parabola Properties	Shape: Parabola Opens Up: $a > 0$ Opens Down: $a < 0$	Graphical behavior.
8	Vertex & Axis	Vertex: $(-\frac{b}{2a}, -\frac{D}{4a})$ Axis of symmetry: $x = -\frac{b}{2a}$	Key points on the graph.

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