

HELINIKA - ALGEBRA FORMULAS CHEAT SHEET

1. BASIC ALGEBRAIC IDENTITIES

- $(a + b)^2 = a^2 + 2ab + b^2$
- $(a - b)^2 = a^2 - 2ab + b^2$
- $(a^2 - b^2) = (a - b)(a + b)$
- $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$
- $(a - b)^3 = a^3 - b^3 - 3ab(a - b)$

2. LAWS OF EXPONENTS & POWERS

- $a^m \times a^n = a^{m+n}$
- $a^m / a^n = a^{m-n}$
- $(a^m)^n = a^{mn}$
- $(ab)^m = a^m b^m$
- $a^{-n} = 1/a^n$
- $a^0 = 1$

3. ROOTS & RADICALS PROPERTIES

- $\sqrt{ab} = \sqrt{a} \times \sqrt{b}$
- $\sqrt{a/b} = \sqrt{a} / \sqrt{b}$
- $(\sqrt[n]{a})^n = a$
- $\sqrt[m]{(\sqrt[n]{a})} = \sqrt[mn]{a}$

4. QUADRATICS & EQUATIONS

- Standard Form: $ax^2 + bx + c = 0$
- Quadratic Formula: $x = [-b \pm \sqrt{b^2 - 4ac}] / 2a$
- Discriminant (D) = $b^2 - 4ac$

5. BASIC LOGARITHM PROPERTIES

- $\log(xy) = \log(x) + \log(y)$
- $\log(x/y) = \log(x) - \log(y)$
- $\log(x^n) = n \log(x)$
- $\log_a(a) = 1$
- $\log_a(1) = 0$