

Basic Formulas – Algebra

1. $(a+b)^2 = a^2 + b^2 + 2ab$

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

3. $a^2 - b^2 = (a+b)*(a-b)$

4. $(a+b)^2 - (a-b)^2 = 4ab$

5. $(a+b)^2 + (a-b)^2 = 2(a^2 + b^2)$

11. $(a+b+c)^2 = a^2 + b^2 + c^2 + 2(ab+bc+ca)$

12. $(a+b+c)^3 = a^3 + b^3 + c^3 + 3(a+b)*(b+c)*(c+a)$

6. $(a+b)^3 = a^3 + b^3 + 3ab(a+b)$

7. $(a-b)^3 = a^3 - b^3 - 3ab(a-b)$

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

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

10. $a^3 + b^3 + c^3 - 3abc = (a+b+c)*(a^2 + b^2 + c^2 - ab - bc - ca)$

Linear Equation

$a_1x + b_1y + c_1 = 0$

$a_2x + b_2y + c_2 = 0$

1. If $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ The system is consistent and has unique solution.

2. If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ The system is consistent and has infinite solutions.

3. If $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ The system is inconsistent and has no solution.

Quadratic Equation

$ax^2 + bx + c = 0$

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