

Formula Sheet

This formula sheet contains the major formulas you need to know to be successful in Algebra 1!

Linear:

Slope-intercept form: $y = mx + b$

Point-slope form: $y - y_1 = m(x - x_1)$

Standard form: $Ax + By = C$

Slope: Change in y /Change in x

Exponents:

Product of Powers Rule: $x^a \cdot x^b = x^{a+b}$

Quotient of Powers Rule: $x^a / x^b = x^{a-b}$

Power of a Power Rule: $(x^a)^b = x^{a \cdot b}$

Power of a Product Rule: $(x \cdot y)^a = x^a \cdot y^a$

Power of a Quotient Rule: $(x/y)^a = x^a/y^a$

Zero Exponent Rule: $x^0 = 1$

Negative Exponent Rule: $x^{-a} = 1/x^a$

Factoring:

FOIL: First Outer Inner Last

Difference of Squares:

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

Perfect Square Trinomials:

Positive: $a^2 + 2ab + b^2 = (a + b)^2$

Negative: $a^2 - 2ab + b^2 = (a - b)^2$

Translations of Functions:

Up: $f(x) + b$

Down: $f(x) - b$

Left: $f(x + b)$

Right: $f(x - b)$

Quadratics:

Standard Form: $y = ax^2 + bx + c$

Factored Form: $(x - r_1)(x - r_2)$

Vertex Form: $y = a(x - h)^2 + k$

Quadratic Formula:

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

Discriminant: $b^2 - 4ac$

Axis of Symmetry (for vertex): $x = -b/2a$

Exponential Functions:

General Formula: $y = b(a^x)$

Exponential Growth: $a > 1$

Exponential Decay: $0 < a < 1$

Financial Literacy:

Simple Interest: $i = prt$

Compound Interest: $B = p(1 + r)^t$

Continuously Compounded Interest:

$A = Pert$

Probability and Statistics:

Mean: Sum of terms / Number of terms

Median: Middle term

Mode: The term that appears the most often

Range: Largest term - Smallest term

Probability: Outcome wanted / Total given

Lines of Best Fit: $y = mx + b$

Reflection of Functions:

Horizontal Reflection: $f(-x)$

Vertical Reflection: $-f(x)$

Order of Operations:

PEMDAS stands for:

Parentheses

Exponents

Multiply/Divide BEFORE Add/Subtract