

QMS 110: Algebraic Formulas

TRAIN TO LEARN EFFECTIVELY: TIP SHEETS

Simplifying Expressions:

- Combine like terms: Combine terms with the same variables and exponents.
 - For example, $2x + 3x = 5x$.
- Distributive Property: Multiply a term by each term inside parentheses.
 - For example, $a(b + c) = ab + ac$.

Linear Equations:

- Slope-Intercept Form: $y = mx + b$, where m is the slope, and b is the y-intercept.
- Point-Slope Form:
 - $y - y_1 = m(x - x_1)$, where (x_1, y_1) is a point on the line, and m is the slope.

Quadratic Formula:

- The quadratic formula helps find the solutions (roots) of a quadratic equation:
 - In other words it helps you find out at what x -value does $ax^2 + bx + c = 0$, where a , b , and c are constants. This gives you the x -intercepts of the equation.
- Quadratic Equation: $x = (-b \pm \sqrt{b^2 - 4ac}) / 2a$

Factoring:

- Factoring is the process of expressing a polynomial as a product of its factors.
- Common factor: Factor out the greatest common factor (GCF) from the terms.
 - In most cases, you should begin by factoring out the GCF that appears in every term of the equation
- Common Equation Types: if you see an equation that has the same form as the left hand side of the below equations, you can use the right hand side to tell you what the factored form should look like.
 - Difference of squares: $a^2 - b^2 = (a + b)(a - b)$
 - Perfect square trinomial: $a^2 + 2ab + b^2 = (a + b)^2$
 - Difference of cubes: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Exponents:

- Product Rule: $a^m * a^n = a^{(m + n)}$
- Quotient Rule: $a^m / a^n = a^{(m - n)}$
- Power Rule: $(a^m)^n = a^{(m * n)}$
- Negative Exponent: $a^{(-n)} = 1 / a^n$
- Zero Exponent: $a^0 = 1$

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Logarithmic Functions:

- Logarithm Definition: $\log_a(x) = y$ means $a^y = x$.
- Properties:
 - $\log_a(xy) = \log_a(x) + \log_a(y)$,
 - $\log_a(x/y) = \log_a(x) - \log_a(y)$,
 - $\log_a(x^n) = n * \log_a(x)$.

Systems of Equations:

- Substitution Method: Solve one equation for a variable, then substitute it into the other equation.
- Elimination Method: Add or subtract equations to eliminate one variable, then solve for the other.