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Xavier College Preparatory High School

Algebra 1 Exit Exam - List of Topics and Practice Problems

- ❖ No calculators allowed.
- ❖ Students should be familiar with these topics and sample problems from an Algebra 1 course.

Topics covered on the exam (with sample problems):

- Evaluating algebraic expressions

Evaluate: $\frac{5 - 2ax}{x^2 + b}$ when $a = 3$, $b = 1$, $x = -2$

- Order of operations

Simplify: $-2^3 - 6(-2) + 1$

- Adding like terms

Simplify: $8n - 3 - 9n + 5 + 3n - 12$

- Solving linear equations

Solve for b: $4b + 2(b - 4) = 8(b + 3)$

- Graphing linear equations

Graph: $3x - 2y = 6$

- Slope

Find the slope for the given points: $A(4, 5)$ and $B(9, 10)$

- Parallel and perpendicular lines

Write an equation of the line that is perpendicular to $2x - 3y = -3$ and contains the point $(0, 5)$.

- Finding the equation of a line

Write the equation of the line that has a slope of 4 and passes through $(5, -2)$.

- Solving linear inequalities

Solve for x: $\frac{1}{3}x - \frac{5}{6} \leq \frac{1}{2}x$

- Solving and graphing a system of linear equations

Solving with the elimination or substitution method:

$$3x - 4y = 19 \text{ and } x + y = 4$$

- Laws of exponents

Simplify: $(-4ab^2c)(-ab^3c)(-2a^2b^5c)$

- Distributive property

Multiply: $7y(5xy - 4x + 2)$

- Quadratic formula

Solve using the quadratic formula: $-2x^2 + 12x + 4 = 0$

- Solving a quadratic equation by factoring

Solve by factoring: $15x^2 - 19x - 10 = 0$

- Factoring a difference of squares

Factor: $3x^2 - 75$

- Multiplying and dividing rational expressions

Simplify: $\frac{2c^2 - 10cd + 12d^2}{3c^2 - 21cd + 30d^2} \cdot \frac{15c^2 + 12cd - 3d^2}{4c^2 - 8cd - 12d^2}$

- Adding rational expressions

$$\frac{2b - 1}{b^2 + 3b - 10} + \frac{2}{b^2 - b - 30}$$

- Solving and graphing a system of linear inequalities

$$\begin{cases} y < 2x + 8 \\ y \geq x - 7 \end{cases}$$

- Solving a rational equation

Solve for x: $\frac{6}{x} + \frac{3}{2} = \frac{6}{4x}$

- Simplifying radicals

Simplify: $3\sqrt{32} - 5\sqrt{50}$

- Solving radical equations

Solve for x: $5 + \sqrt{2x - 4} = 7$