

## A.M.D.G.

### Xavier College Preparatory High School

#### Algebra 1 Exit Exam - List of Topics and Practice Problems

- ❖ The exam is 50 questions in length.
- ❖ Students have an hour and a half to complete.
  
- ❖ 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 a system of linear equations

Solve with the addition 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 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:  $5 + \sqrt{2x - 4} = 7$