

Name: _____

**Summer Assignment for Students Entering Advanced Algebra
Due on the first Day of class in September**

Directions: Answer all problems as indicated. You must show all necessary work.

1.) Express the sum in simplest form:

$$\frac{4}{5} + \frac{7}{3}$$

2.) Express the quotient in simplest form:

$$\frac{21}{9} \div \frac{56}{45}$$

3.) Evaluate $4x^2y - x(y - z)$ when $x = -2$, $y = 3$, and $z = 7$.

4.) Express in simplest form:

$$5\sqrt{90}$$

5.) Express in simplest form:

$$\frac{2\sqrt{2}}{\sqrt{6}}$$

6.) Solve for x:

$$\frac{3}{4}(8x - 12) - 5x = 8$$

7.) Solve for all values of x:

$$3x - 2 \geq 5x + 4$$

8.) Solve for all values of x:

$$|2x - 4| = 10$$

9.) Determine the x & y intercept of the following equation:

$$\frac{2}{3}x - \frac{5}{2}y = 18$$

10.) What is the slope-intercept form of the line that passes through (2,3) and (1,5)?

11.) What is the equation of the line that passes through (-15,-4) and is perpendicular to the line whose equation is $3x + 7y = 51$?

12.) Solve for all values of x by factoring:

$$x^2 - 20x + 96 = 0$$

13.) Solve for all values of x by factoring:

$$5x^2 + 6 = -17x$$

14.) Solve for all values of x in simplest form using the quadratic formula:

$$x^2 + 12x = -35$$

15.) Evaluate the discriminant and describe the nature of the roots:

$$-2x^2 - 5x - 4 = 0$$

16.) Express in simplest form:

$$(3 + 10i)^2$$

17.) Express in simplest form:

$$\frac{2 + 5i}{5 + 2i}$$

18.) Express the product in simplest form:

$$(x + 3)(x^2 - 2x - 1)$$

19.) Express the quotient in simplest form:

$$(x^3 - 3x^2 + x - 8) \div (x - 1)$$

20.) Express the difference in simplest form:

$$\frac{2x + 1}{x^2 + 8x + 16} - \frac{3}{x^2 - 16}$$

21.) Express in simplest form:

$$\frac{\frac{20}{x+1}}{\frac{1}{4} - \frac{7}{x+1}}$$

22.) Solve for x:

$$\frac{2}{x+1} + \frac{x}{x-1} = \frac{2}{x^2-1}$$

23.) Given $f(x) = \frac{1}{3}x - 4$, what is $f^{-1}(x)$?

24.) Solve for all values of x:

$$\sqrt{2x + 1} + 6 = 9$$

25.) A farmer has 64 yards of fencing and wants to create a rectangular enclosure for his animals. What is the enclosure with the greatest area?