

## Honors Pre-Calculus Review Assignment

The following problems are aligned to concepts that you should have mastered previous mathematics classes. Students will have class time (2 class periods) to ask questions about the material and there will be an assessment on the third day of class.

### Part 1: Arithmetic and Basic Algebra

I. ORDER OF OPERATIONS--Use order of operations to simplify each expression, do not use a calculator.

1.  $6^3 \div [5^2 - 3^2 - (-2)^2]$

2.  $(6^2 - 3 \cdot 2^2 + 1) \div [(0 + (-5)^2)]$

3.  $\frac{[\frac{3}{4} - -\frac{1}{2}](-8)}{\frac{8}{9} \div -4}$

4.  $\frac{-20[-12 \div (-\frac{2}{3})]}{-12(-\frac{2}{3})}$

II. SIMPLIFYING EXPRESSIONS--Use distributive property to simplify.

5.  $3.4t + 1.6s - (-1.9t - 4.2s)$

6.  $2[-7(x + 2y) - x] - 3(x + 2y)5$

III. ABSOLUTE VALUE EQUATIONS

7.  $|2x + 9| = 30$

8.  $7 + \frac{3}{4}|x - 2| = 9$

IV. SOLVING INEQUALITIES--Graph to find the solution and write your answer in interval notation.

9.  $2(x - 5) - 3(2x - 5) < 5x + 1$

10.  $20(\frac{1}{5} - \frac{x}{4}) \geq -2x$

11.  $-\frac{4x + 2}{5} \geq 0.04$

12.  $\frac{3x - 3}{5} < \frac{6(x - 1)}{10}$

13.  $\frac{5}{7}(-1 + x) \leq \frac{45}{21}$  or  $-x + \frac{2}{3} \leq -\frac{10}{3}$

14.  $14 < 3h + 2 < 2$

V. SOLVING ABSOLUTE INEQUALITIES

15.  $-\frac{1}{3}|6 - 4x| + 2 \leq 1$

16.  $1 - \left| \frac{1}{4}y + 8 \right| > \frac{3}{4}$

17.  $6 + 5|2r - 3| \geq 4$

18.  $2 \leq |x - 1| \leq 5$

VI. EQUATIONS OF LINES

Finding Equations of Lines

19. Find an equation in standard form that passes through the points  $(-2, 3)$  and  $(-2, 6)$ .

20. Find an equation in standard form that passes through  $(1, 2)$  and perpendicular to  $y - 2x = 3$ .

## VII. QUADRATIC EQUATIONS

Solve the following quadratic equations.

21.  $8x^2 - 55x + 56 = 8 + x$

22.  $8x^2 + 95x + 280 = -x$

23.  $-6k = -9 - k^2$

24.  $6a^2 - 66a + 98 = -3a - a^2$

### Part 2: Basic operations with polynomials

#### I Multiplying Polynomials:

1. a.  $(3x+5)(3x-5)$

2. a.  $(3y-4)^2$

3.  $(8x-y-4z)(8x-y-4z)$

#### II Solve by factoring:

4.  $2x^2 - 10x = 0$

5.  $2c^2 - 9c + 4 = 0$

6.  $a^4 - 29a^2 + 100 = 0$

7.  $2b^3 - 7b^2 + 6b = 0$

8.  $3y^2 = 15 - 4y$

9.  $(8-n)^2 = 2(24-n^2)$

#### IV Solve by using the quadratic formula:

10.  $4x^2 + 7x = 0$

11.  $3y^2 + 7y + 3 = 0$

12.  $5n^2 = 1 - 2n$

#### V Simplify using exponent rules

13.  $-x^{-3}y^2(-x^2y^3)^5$

14.  $\frac{xy^3}{(x^5x^{-3})^{-3}(x^4y^{-1})}$

15.  $\frac{(m^{-3}n^5)(m^5n)}{mn^2(m^2n^2)^3}$

#### VI Simplify

16.  $-7\sqrt{200xy^5}$

17.  $\sqrt[5]{-64k^4}$

18.  $\sqrt[3]{40x^7}$

19.  $(64n^4)^{\frac{3}{2}}$

20.  $(1000x^3)^{\frac{1}{3}}$

21.  $(x^8)^{-\frac{1}{2}}$

22.  $(81x^8)^{\frac{3}{4}}$

#### VII Solve the radical equations

23.  $x-5 = \sqrt{3x-5}$

24.  $\sqrt{8-x} = \sqrt{3x-8}$

### Part 3: Graphs of basic functions

Graph the following functions, a sketch of your calculator screen is **NOT** acceptable. Draw and label your own axes. Be sure to indicate the domain and range for each of the functions, and identify all key features.

1.  $f(x) = x$

2.  $f(x) = x^2$

3.  $f(x) = x^3$

4.  $f(x) = |x|$

5.  $f(x) = \frac{1}{x}$

6.  $f(x) = \sqrt{x}$

7.  $f(x) = e^x$