Fairfield College Preparatory School
Honors Pre-Calculus
Summer Assignment ***Name*_____**

Gentlemen,

In preparation for your Honors Pre-Calculus class next year, you are required to complete the following packet by the first full day of classes.

- Make sure to **SHOW ALL STEPS** and place your answer on the line provided.
- This assignment covers topics that you have covered over the past few years in Algebra, Geometry and Algebra 2.
- If you are struggling with a particular topic, please use the countless resources available on the internet.
- Please show all work directly on this packet and **print it out** for the first day of class.
- Make sure to show all work, and box your final answers.
- Calculator is NOT necessary.

The assignment will be checked and graded for correctness. Please be prepared for a quiz on this material in the first week of school. Enjoy your summer!

The Math Department

1. Evaluate Each Expression Using Order of Operations

   a. $-4-(1-5)-(-4)^2$

   b. $\left(\left(-16-(-2+1)\right)*2\right)\div 5$

2. Combine like terms

   c. $4x^2+y^2+x+5y^2$

   d. $-4x(x-1)-(-x+5)$

3. Evaluate for given values

   a. $z-(y+x^2);\ x=-4, y=-14,\ z=2$

   b. $\frac{a-b}{-c^2},\ a=-6,\ b=-2,\ c=2$

4. Write the Equation of the Line in Slope-Intercept Form

   a. A line passing through (3, -2) with a slope of 4/5

   b. A line passing through the points (-1, -4) and (3, 2)

c. A line passing through (-2, 4) with a slope of 0

d. A line passing through (2, -3) and parallel to 2x + 5 = 3y

e. A line passing through (2, -3) and perpendicular to 2x + 5 = 3y

5. Multiply and Give Answer in Standard Form

a. $(6x + 5)(x - 3)$

b. $(x - 2)(2x^2 - 3x + 5)$

6. Solve the Following Equations Algebraically (No Calculator)

a. $2(5 - 2x) - 3(1 - x) = x + 1$

b. $x^2 - 3x - 28 = 0$

c. $3(x-2)=5(x-1)$

d. $\frac{5}{x}+\frac{4}{x}=3$

e. $2x^2+8x=0$

f. $4x^2-25=0$

7. Solve using quadratic formula. Leave your answer in simplified radical form.

   $f(x)=3x^2+2x-4$

8. Find the inverse of $f(x)=3x-10$

9. Simplify the rational expression. **State any restrictions.** $\frac{x^2-x-6}{x^2-9}$

10. Add the rational expression and simplify. **State any restrictions.**

$\frac{2}{x^2-4} + \frac{5}{x^2-4x-3}$

11. Simplify. $\frac{1}{2+\sqrt{5}}$

12. Multiply. $(6\sqrt{2}-1)(3\sqrt{3}+2)$

13. Solve for x.

a. $9^x = 3^{x-2}$

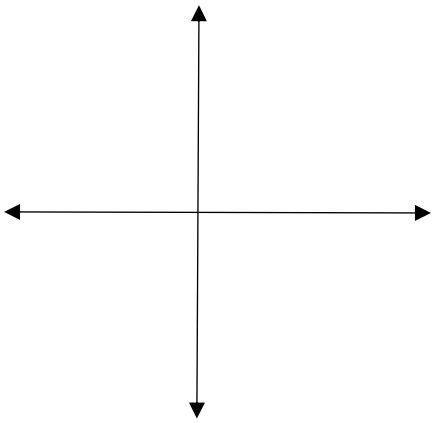
b. $log\ 5x = 2$

c. $log_3 x + log_3(x-2) = log_3 8$

d. $log_3(x+2) - 3 = log_3 2x$

14. Sketch a graph of the following quadratic function plotting at least 5 points. Then identify each of the following:

$f(x) = -\frac{1}{2}(x+4)^2 - 3$



a. Vertex

b. Axis of Symmetry

c. Y-intercept

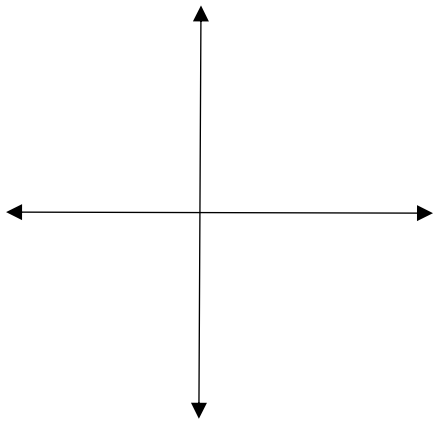
d. Domain:

e. Range:

f. Rewrite the equation in standard form.

15. Identify the requested items and graph.

a. $f(x) = x^3 - 4x^2 + 4x$



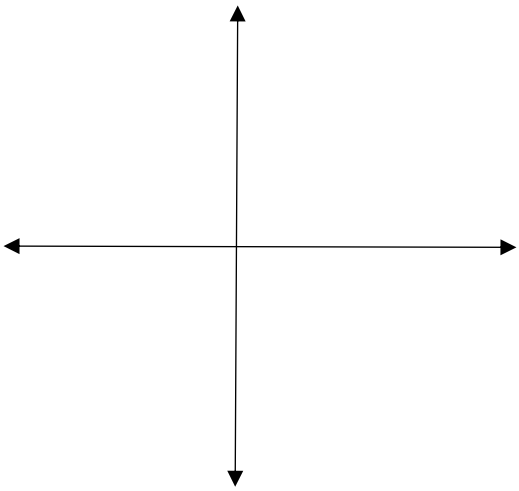
Degree:

$x-$ intercept(s):

$y-$ intercept:

End Behavior:

b. $f(x) = \frac{x^2-25}{x^2-3x-10}$



Factored form:

Hole:

Vertical Asymptote:

Horizontal Asymptote:

x intercept:

y intercept: