Pre-Calculus 12 Special Assignment **3** Name: _____ Block: _____

Assignment mark:____/____
Assignment quiz mark:____/____

This assignment is due on **November 5, 2013**.

Goals:

1) To practice the art of communicating a written solution to a math problem. You must clearly present the key concepts and the logical sequence of steps taken to arrive at a solution. Just answers are not good enough! Illustrations of solutions by graphing or drawing diagrams are often part of your presentation.
2) To encourage the use of the math textbook as a resource for you to learn from and get explanations of concepts and sample solutions.
3) To encourage a dialog between students of concepts and processes to achieve solutions to mathematical problems.

Format requirements:

This assignment will be graded so you must show at least one (most of these questions require many more than one) step of work for each question. If I cannot see clearly what you have done I cannot give you the marks. There is only one accepted format for this and all future assignments.

1) You will choose **3 of the 5** given questions to complete. (It is still to your advantage, however, to know how all of them are done.) All questions are worth the same number of marks. The questions must be in the same order that they are presented to you. If you do more than 3 questions, only the first 3 will be marked.

2) Each step

   for each question

   must be

   on the next line

   down, not to the right.

3) Students are encouraged to help each other with understanding the assignments but must submit their own work.

4) Any explanations must be done in complete sentences with proper mathematical notation as necessary.

Copied assignments will not be marked.

1. Divide each of the following. Check your answers and state any restrictions. For each division, explain how it is different from dividing by $x - a$ and what extra steps or different methods were needed in each case.

a. $(2x^2 - 5x + 3) \div (2 - x)$

b. $(3x^3 - 4x + 1) \div (2x^2 - 13x + 6)$

c. $(2 - x^2 - x^4) \div (1 - 2x)$

2. The table below shows the remainders when the polynomial $ax^2 + bx + c$ is divided by each divisor shown. Find the values of a, b, and c.

Divisor	Remainder
$x - 2$	2
x	0
$x + 2$	14

3. State all of the possible rational roots of $12x^4 + 28x^3 + 5x^2 - 7x - 2$, then factor the polynomial fully.

4. Consider the division problems $(4x^3 + 2x - 3) \div (x + {}^1/_2)$ and $(4x^3 + 2x - 3) \div (2x + 1)$.

a. Is the quotient the same? Is the remainder the same? If they aren't the same, how are they related?

b. Give a method for using synthetic division to divide a polynomial by $ax + b$. Why does it work?

c. Divide $2x^3 - 3x^2 + 4$ by $2x - 3$ using synthetic division.

5. A family has three daughters who are triplets. In 3 years, the product of their ages will be 1 less than 117 times the sum of their current ages. How old are they now?

a. Use graphing technology to solve the resulting equation and show **both methods** of solving graphically (explain and illustrate your steps).

b. Solve algebraically.