Pre-Calculus 12 Special Assignment 4 Name: _____ Block: _____

Assignment mark:____/____
Assignment quiz mark:____/____
Average of two marks:____%

This assignment is due on **November 28, 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.

Marks will be deducted if these requirements are not met. Students will be penalized 20% per day when assignments are turned in late and be worth 0 (zero) on the day they are handed back to the students.

Copied assignments will not be marked.

Questions:

1. Consider the function $R(x)=\sqrt{P(x)}$, where $P(x)$ is a polynomial function of degree 1 or greater.
   a) Determine a possible equation for $P(x)$ if $R(x)$ has a domain of $-2\le x\le 2$.
   b) Determine a possible equation for $P(x)$ if $R(x)$ has a domain of $x\le -2$ or $x\ge 2$.
   c) Determine a possible equation for $P(x)$ if $R(x)$ exists only at the origin.
   d) Determine a possible equation for $P(x)$ if $R(x)$ exists only at the points (2,0) and (-2,0).

2. a) Determine the equation of the oblique asymptote of $y=\dfrac{2x^2-3x+5}{3x+2}$.
   b) Determine a rational function that has an oblique asymptote of $y=3x-1$. Verify this using algebra.
   c) Determine the equation of the parabolic asymptote of $y=\dfrac{3x^3-x^2+4x+1}{x-2}$.
   d) Determine a rational function that has a parabolic asymptote of $y=-x^2+2x-3$. Verify this using algebra.

3. Consider the inequality $\dfrac{x}{x+1}<\dfrac{2x}{x-2}$.
   a) Solve for *x* algebraically.
   b) Show the solution graphically using a sketch.

4. a) Complete this chart using exact values:

θ - Angle (gon)	$\sin\theta$	$\cos\theta$	$\tan\theta$
0			
33 1/3			
50			
66 2/3			
100			
200			
300			

   b) Explain the angular unit abbreviated by “gon” by comparing it to degrees and radians.

5. For each of the following functions, graph it (including a table of values), and state its domain and range. For any non-permissible values in the domain, indicate whether they are vertical asymptotes or holes, and explain why they are vertical asymptotes or holes.
   a) $y=\sin x$
   b) $y=\dfrac{\sin x\cos x}{\cos x}$
   c) $y=\dfrac{\sin x}{\cos x\sin x}$