TOPICS and Concepts for the Math 96 Challenge Exam

NOTE:

- #1: Be sure you understand the difference between the set of Real numbers and the set of Complex numbers.
- #2: A calculator, cell phone, translator, dictionary or any similar device is NEVER allowed.
- #3: NO formula will be given: see, #12, #13 #14 below.
- #4: The problems on the 'Samples' exam contains problems similar to, but not exactly like, problems on the actual Challenge Exam. Further, the Challenge Exam may contain problems that are not shown on the 'Samples' Exam.' **STUDY !!**

The Challenge exam for Math 96 may include, but will not be limited to:

1. Solving inequalities of the form: (a) quadratic, (b) rational, and (c) absolute value. Correct notation for solution is expected (i.e. set-builder, or interval notation).
2. Solving equations containing radicals.
3. Solving rational equations.
4. Solving logarithmic and exponential equations, utilizing the common properties of Logarithms.
5. Find the equation of a line (either parallel, or perpendicular to a given line, or through given points).
6. Find the explicit (nth term) formula for an Arithmetic or Geometric sequence.
7. Find the indicated term of an Arithmetic or Geometric sequence.
8. Find the indicated sum of an Arithmetic or Geometric series.
9. Simplify a rational expression involving exponents. (Note: exponents may be decimal, fractional, negative or whole numbers.)
10. Solve a system of linear equations.
11. Identify a conic (circle, parabola, ellipse, hyperbola) and it's special features (center, radius, foci, asymptotes) .
12. Solve an application involving various geometric concepts: similarity, volume of: sphere, cylinder, rectangular solid. Area of a sector; Length of an arc.
13. Solve an application involving: distance and time, work-rate, mixtures, proportions, exponential growth or decay, compounding interest, continuous growth.
14. The following formulas must be memorized: Pythagorean Formula, Quadratic Formula, exponential growth or decay, special triangles (30-60-90^o and 45-45-90^o), sum for Arithmetic and Geometric Series.