**Topic Checklist for Test 3**
**College Algebra**

**Format**

- The exam will be around 5 pages long.
- It is a paper and pencil exam – it will not be on the computer.
- You will need to show your work.
- You may use a scientific or graphing calculator.
- The exam should last you around 50 minutes, but it is not timed.  That said, you must finish the exam after you begin it and cannot leave part way thru and then complete it later.

**Basic Content**

- You are responsible for section 17.1 in Academic Systems and the supplemental sections 1.6 and 2.3.
- In addition to the material in the sections, you are responsible for all of the basic facts you have learned since kindergarten.  These include the following facts:
    - Barack Obama is the President of the United States of America
    - $-1^2 = -1$.
    - " $\dfrac{a}{0}$ is undefined "
    - You must be able to read and interpret quotes.

**Where You Should Be**

- You should plan to finish your work two days prior to the exam (or early on the day before the exam at the latest).  You should plan to have your homework done by a decent hour on the day before the exam.
- After completing your homework, you should plan on spending 2 to 5 hours studying for this exam (more time is certainly appropriate when necessary).
- A good way to practice is to work thru even problems in each section *with your book* closed.
- Remember, the exam is closed book and closed note.  It is also timed.  I recommend that you study under the same or similar constraints.

**Topics**

**17.1: Sequences and Series**

- Arithmetic sequences
    - Definition and notation for a sequence
    - Arithmetic sequences and finding the $n^{th}$ term
    - Sum of the first $n$ terms of an arithmetic sequence
- Geometric sequences
    - Geometric sequences and finding the $n^{th}$ term
    - Sum of the first $n$ terms of a geometric sequence
    - Sigma notation for a sum
    - Finding an "infinite sum" for certain geometric sequences

**1.6: Applications of Functions to Business and Economics**

- Total cost, total revenue, and profit
    - What is the formula for profit?
    - Given functions for revenue and cost, find a profit function.
    - Given a linear cost/revenue/profit function, <u>find and interpret</u> the marginal cost/revenue/profit.
    - Break even analysis
        - Find the breakeven point.
        - Identify the profit and loss regions.
- Supply, demand, and market equilibrium
    - Find the market equilibrium point
    - Find linear models for supply and demand
    - Supply and demand with taxation
        - Determine the market equilibrium after accounting for taxation.

**2.3: Business applications of quadratic functions**

- Supply, demand, and market equilibrium
    - Find market equilibrium given quadratic models and know how to eliminate unrealistic results.
    - Solve quadratic equations using factoring or the quadratic formula.
- Break even points and maximization
    - Find the revenue function given the demand function
    - Find the break even points given: cost and revenue or the profit function
    - Maximize profit by finding the vertex of a parabola.