Summer 2015 Test 1 Syllabus

Test 1 will cover Chapter 1 and Chapter 2. We skipped 2.4 from Chapter 2. We skipped some parts of 2.5, 2.7 and 2.8.

1. **Domain**(10 points)

   You are supposed to know the domain of the following functions:

   - Polynomials
   - Rational functions
   - Root functions
   - trigonometric functions(sine,cos,tan,cot,sec,cosec,..)
   - inverse trigonometric functions (arcsin,arccos,arctan,..)
   - logaritmic functions
   - exponential functions

2. **Limit Definition of Derivative**(10 points)

   You are supposed to know how to find derivative of a function by using limit definition.

3. **Finding inverse of a given one-to-one function**(10 points)

4. **Horizontal and Vertical Asymptote**(10 points)
   Please check lecture notes to see examples about this topic, check definitions carefully.

5. **Trigonometric functions**(15 points)

   Please check the quiz on trigonometric functions and trigonometry worksheet. You are supposed to know how to evaluate following functions:

   - $sin(\pi \pm \theta)$
   - $cos(\pi \pm \theta)$
   - $sin(\frac{\pi}{2} \pm \theta)$

- $cos(\frac{\pi}{2} \pm \theta)$
- $arcsin(\theta), arcos(\theta), arcsec(\theta), arccot(\theta), arccosec(\theta)$.

6. **Exponential growth** (10 points) You should know when and how to use exponential function which is $y = Ca^x$.

7. **True-False** (10 points) You should know properties of even,odd functions and inverse functions. You should have a good understanding about the definition of being continuous at a point. You should also know the relation between being continuous and being differentiable.

8. **Limit**(25 points)

   - Limit of a polynomial
   - Limit of a rational function
   - Squeeze Theorem
   - Calculating limits at infinity
   - Limit of exponential functions at $\pm\infty$
   - Limit of logarithmic functions (especially we can state the vertical asymptote of a logarithmic function by using infinite limits).
   - Limit of tan, arctan (find vertical asymptotes of tan, and horizontal asymptotes of arctan, state them by using infinite limits and limits at infinity).