**Math 197 Prelude to Calculus I**

**General Guidelines**

* The main goal is to get students ready for their further study in Calculus I (Math 226). Students have to pass both Math 197 and the subsequent Math 198 to enroll in Math 226. These courses concentrate on the understanding and skills that are necessary to do well in Calculus I. It is a common complaint (not just at SFSU but virtually all colleges and universities in the US) that students are not ready to take calculus despite having taking requisite courses at high school or college. Our goal is to fix this situation at SFSU.
* Overarching theme for Math 197 and later for Math 198 is the understanding of *mathematical models* represented by various types of *functions.*
* We want students to grasp the concept of function in all its representations (tabular, algebraic, graphical). We want them also recognize the following functions and use their properties: linear, quadratic, polynomial, exponential, logarithmic (but not trigonometric functions – trigonometric functions will be covered in Math 198).
* Algebra of functions (sums, difference, product, quotient, composition, inverse) will be reviewed both in general and in all the types of functions that will be discussed. It is a good idea that you revisit these concepts as new functions are introduced.
* A typical student is someone who might have been placed in remedial mathematics courses (Math 60 and/or Math 70) in the past. We will help them in this course primarily in two ways. First, we will increase the time we spend on each topic by 50%. Second, we will reinforce their knowledge in potentially weak spots such as rules of exponents, order of algebraic operations, solving equations, simplifying rational expressions etc. as they are learning new and higher-order concepts. This is diagonally opposite to the remedial math approach: in remediation, students review tools and skills in algebra, geometry, and problem solving *first,* regardless of their current or future path of study, and *then* move on to courses where they will have to use these tools and skills.

**Student Learning Objectives for Math 197**

Students will be able to:

1. Correctly use algebraic operations to compute quantities, and use rules of algebra to solve equations
2. Use functions with different representations to interpret, summarize, and analyze data
3. Distinguish between linear, quadratic, polynomial, and rational functions by their formulas and graphs
4. recognize exponential growth and express this using appropriate exponential functions
5. recognize logarithmic functions as inverses of exponential functions and draw conclusions using this perspective