Fall 9-1-2000

MATH 152.01: Calculus I

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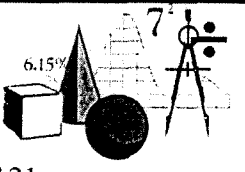
The University of Montana

MATH 152 CALCULUS 2 Fall 2000



Prerequisite: Math 121
Time: 8:10-9:00 MTWF **Room:** Math 311

Instructor: Dr. Hashim Saber **Email:** saber@selway.umt.edu

Office: Math 303 **Tel:** 243-2075

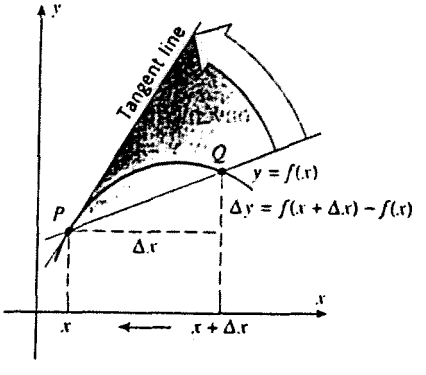
Office Hours: 10-12 MTW or by appointments.

Textbook: Calculus by Haward Anton 6th Edition. We will be using Maple software throughout the course.

- **Course Description :**

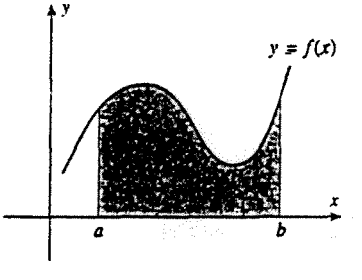
Calculus is one of the great intellectual achievements of civilization, with important applications to many fields. We hope that in Math 152 you will feel some of the excitement of that achievement. This course is designed to enable every student to understand the concepts of calculus and to use these concepts to solve applied problems. We will be using the computer algebra system **Maple V** (Release 5) to help achieve these goals. You may wish to use a graphic calculator throughout the course.

The word calculus comes from the Latin term for a pebble used as a token in counting and calculating. Calculus can be described as the mathematics of change and motion. Since change and motion are implicit in all aspects of physical world, the methods of calculus are useful in all the physical, natural, and social sciences, including economics. Calculus evolved from two seemingly unrelated geometric problems: finding the tangent line to a curve and finding the area bounded by two curves.



$$\frac{dy}{dx} = \lim_{\Delta x \to 0} \frac{\Delta y}{\Delta x} = \lim_{\Delta x \to 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

The tangent line problem



$$\int_a^b f(x)\,dx = \lim_{n \to +\infty} \sum_{k=1}^{n} f(x_k^*)\Delta x$$

The area problem