

# Syllabus for Paul Dawkins Math 2413

This is the order of topics that I hope to follow this semester.

## Topic

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### Review\*

Functions  
Inverse Functions  
Trig Functions  
Solving Trig Equations  
Exponential Functions  
Logarithm Functions  
Exponential and Logarithm Equations  
Common Graphs

### Limits

Tangent Lines and Rates of Change  
The Limit  
One-Sided Limits  
Limit Properties  
Computing Limits  
Infinite Limits  
Limits At Infinity, Part I  
Limits At Infinity, Part II  
Continuity  
The Definition of the Limit\*\*

### Derivatives

The Definition of the Derivative  
Interpretation of the Derivatives  
**Exam 1 - Tentative Date : September 26, 2017**  
Differentiation Formulas  
Product and Quotient Rule  
Derivatives of Trig Functions  
Derivatives of Exp. and Log. Functions  
Derivatives of Inverse Trig Functions  
Derivatives of Hyperbolic Trig Functions\*\*  
Chain Rule  
Implicit Differentiation  
Related Rates  
Higher Order Derivatives  
Logarithmic Differentiation\*\*\*  
**Exam 2 - Tentative Date : October 17, 2017**

## **Applications of Derivatives**

Rates of Change\*\*  
Critical Points  
Minimum and Maximum Values  
Finding Absolute Extrema  
The Shape of a Graph, Part I  
The Shape of a Graph, Part II  
The Mean Value Theorem  
Optimization  
Indeterminate Forms and L'Hospital's Rule  
Linear Approximations  
Differentials  
Newton's Method\*\*  
Business Applications\*\*\*

**Exam 3 - Tentative Date : November 7, 2017**

## **Integrals**

Indefinite Integrals  
Computing Indefinite Integrals  
Substitution Rule for Indefinite Integrals  
More Substitution Rule  
Area Problem  
The Definition of the Definite Integral  
Computing Definite Integrals  
Substitution Rule for Definite Integrals

## **Applications of Integrals**

Average Function Value\*\*\*  
Area Between Curves  
Volumes of Revolution Using Rings  
Volumes of Revolution Using Cylinders  
More Volume Problems\*\*  
Work\*\*

**Exam 4 - Tentative Date : November 30, 2017**

\* Several sections of this chapter are briefly covered during the first few days of each semester. The exact sections covered varies from semester to semester.

\*\* These sections are on the syllabus and but are only covered if I have the time.

\*\*\* These sections are not on the syllabus and while I'd like to cover them I never have the time.