

**University of Houston**  
**Mathematics Department**  
**MATH 1314: Elements of Calculus**

**Prerequisite:** Credit for or placement out of Math 1310. Students with prior credit for Math 1431 will not be permitted to enroll in or receive credit for Math 1314.

**Course Description:** Curve sketching and graphical analysis, differentiation and integrations of elementary functions, topics in functions of several variables, applications in business and the social sciences.

**Textbook:** Text is in [electronic form](#).

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<b>Chapter and Section</b>	<b>Suggested Exercises</b>
<b>Chapter 9 Pre-calculus Review (For review by student as needed)</b>	
9.1 Exponents and Radicals	
9.2 Algebraic Expressions	
9.3 Algebraic Fractions	
9.4 Inequalities and Absolute Value	
 <b>CHAPTER 10 Functions, Limits and the Derivative</b>	
10.1 Functions and their Graphs	5,7,9,33-52
10.2 The Algebra of Functions	Odds 1-23,25,29,30,31,34,39,47,48
10.3 Functions and the Mathematical Models in Calculus	1-6,8,9,13,17
10.4 Limits	1-8, odds 11-21, Odds 49-61
10.5 One-Sided Limits and Continuity	1-8,21,23,27
10.6 The DerivativeOdds	9-15,17,19,23,27
 <b>CHAPTER 11 Differentiation</b>	
11.1 Basic Rules of Differentiation	Odds 1-23
11.2 The Product and Quotient Rules	1,7,11,13,17,23,27,29,31,37,41
11.3 The Chain Rule	1,7,13,19,23,29,33,37,43
11.5 Higher-Order Derivatives	1,7,13,19,29
 <b>CHAPTER 12 Applications of the Derivative</b>	
12.1 Applications of the First Derivative	1-8,11,15,21,27,33,Odds 37-43, 51,55,57,63,67,74

12.2 Applications of the Second Derivative	1-8,9-12,17,23,31,37,41,Odds 61-73
12.3 Curve Sketching	1-10,11,15,19,21,25,33
12.4 Optimization I	1-8,13,17,23,31,33,37,40,42
12.5 Optimization II	1,3,4,5,9,18,19

### **CHAPTER 13 Exponential and Logarithmic Functions**

13.1 Exponential Functions	Odds 1-19,21,26
13.2 Logarithmic Functions	Odds 17-25, Odds 33-39
13.3 Differentiation of Exponential Functions	1,5,11,15,21,25,33,36,37,43
13.4 Differentiation of Logarithmic Functions	1,7,11,13,19,29,33,47,50,53

### **CHAPTER 14 Integration**

14.1 Anti-derivatives and Rules of Integration	9,13,17,21,25,31,35,39,43,47,49,51,55,63
14.2 Integration by SubstitutionAlternate	Odds 1-49
14.3 Area and the Definite Integral	1,3,4
14.4 The Fundamental Theorem of Calculus	Alternate Odds 17-37
14.5 Evaluating Definite IntegralsAlternate	Odds 1-27
14.6 Area Between Two Curves	7,11,19,25,31,34

### **CHAPTER 15 Additional Topics in Integration**

15.1 Integration by Parts	1,5,11,15,19,23,26,27,29
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### **CHAPTER 16 Calculus of Several Variables**

16.1 Functions of Several Variables	7,13,17,21
16.2 Partial Derivatives	1,5,9,13,17,21,23,30
16.3 Maxima and Minima of Functions of Several Variables	1,5,9,20,27,29