MAC 2311, Calculus 1
Lecture Topics and Homework Assignments

You should read the textbook sections covered in each day's lecture before class. After each lecture, review your notes and the text to make sure you understand the main concepts **before** you start working the homework exercises.

If you have questions about lecture material, reading or homework you may ask your discussion leader in class or during office hours. You may also talk to your lecturer after lecture or during their office hours. Free tutoring is available in the Teaching Center at SE Broward Hall.

You should complete each assignment **before** your next lecture class, since the material in new lectures build on previous concepts.

Text: Calculus, Early Transcendentals, 2nd edition, by Rogawski

Lecture 1 Pre-calculus Algebra

Reading: Section 1.1
Exercises (1.1), page 10: 11, 20, 24, 25, 37, 38, 44, 45, 46, 54, 71, 75, 80

Lecture 2 Elementary Functions

Reading: Sections 1.2 and 1.3
Exercises (1.2), page 19: 10, 13, 14, 15, 17, 18, 34, 38
Exercises (1.3), page 24: 1, 3, 5, 6, 7, 13−24, 34

Lecture 3 Trigonometry

Reading: Section 1.4
Exercises (1.4), page 31: 3(a)(b), 4(a)(b), 9, 10, 13, 18, 26, 27, 42, 44

Lecture 4 Inverse Functions

Reading: Section 1.5
Exercises (1.5), page 41: 4, 12, 19, 21, 24−28 even, 30−34 even, 39, 40, 43, 44

Lecture 5 Exponential and Logarithmic Functions

Reading: Section 1.6 (skip hyperbolic functions)
Exercises (1.6), page 50: 1, 4, 5, 6, 11, 13, 16, 19, 20, 21, 28, 33, 34

Lecture 6 Limits, Rates of Change and Tangent Lines

Reading: Section 2.1
Exercises (2.1), page 64: 1, 5, 6, 22, 25, 32, 33

Lecture 7 Limits: A Numerical and Graphical Approach

Reading: Section 2.2
Exercises (2.2), page 74: 5, 6, 9, 18, 25, 26, 27, 42, 44, 45, 47, 50, 51

Lecture 8 Evaluating Limits

Reading: Sections 2.3 and 2.5
Exercises (2.3), page 80: 10, 19, 24, 26−30, 31
Exercises (2.5), page 94: 5, 9, 10, 12, 15, 17, 20, 21, 22, 25, 26, 27, 30, 31, 38, 51, 52, 54

Lecture 9 Continuity

Reading: Sections 2.4 and 2.8
Exercises (2.4), page 88: 1, 5, 8, 12, 14, 15, 17, 18, 19, 27, 29, 37, 38, 47, 52, 53, 58, 59, 65, 66, 70, 72, 79, 80
Exercises (2.8), page 109: 1, 5

Lecture 10 Trigonometric Limits

Reading: Section 2.6
Exercises (2.6), page 99: 3, 4, 7, 8, 9, 11, 12, 18, 20, 23, 24, 26, 29, 31, 33, 34, 37, 39, 40, 43, 44, 45, 47, 49

Lecture 11 Limits at Infinity

Reading: Section 2.7
Exercises (2.7), page 105: 4, 9−21 odd, 23, 26, 29, 30, 32, 35, 38, 39, 41, 42

Lecture 12 Definition of the Derivative

Reading: Sections 3.1 and 3.2
Exercises (3.1), page 125: 4, 6, 11−14, 15, 19, 20, 29, 35, 37, 44, 51−55 odd
Exercises (3.2), page 139: 5, 6

Lecture 13 The Derivative as a Function

Reading: Section 3.2
Exercises (3.2), page 139: 43−46, 66−70, 71, 75, 77, 79

Lecture 14 Basic Rules of Differentiation

Reading: Section 3.2
Exercises (3.2), page 139: 12, 13, 14, 17, 18, 19, 20, 24, 26, 29, 31, 32, 34, 35, 36, 48, 50, 51, 52, 59

Lecture 15 Product and Quotient Rules

Reading: Section 3.3
Exercises (3.3), page 147: 3, 6, 7, 11, 12, 14, 16, 21, 22, 26, 28, 29, 30, 39−42, 45, 49

Lecture 16 Rates of Change & Higher Derivatives

Reading: Sections 3.4 and 3.5
Exercises (3.4), page 156: 2, 6, 7, 9(a)(b), 10, 11, 14, 16, 21, 22, 23, 25, 31, 37, 39, 43, 45
Exercises (3.5), page 163: 7, 13, 15, 16, 39, 40 ,41

Lecture 17 Derivatives of Trigonometric Functions

Reading: Section 3.6
Exercises (3.6), page 167: 3−11 odd, 12, 15, 19, 20, 21, 24, 28, 35, 37, 39, 41, 43, 45

Lecture 18 The Chain Rule

Reading: Section 3.7
Exercises (3.7), page 175: 1, 5, 6, 11−19 odd, 20, 22, 35, 36, 38, 40, 43, 46, 48, 50, 54, 57, 63, 70, 77, 79, 84, 88, 90

Lecture 19 Derivatives of Inverse Functions

Reading: Sections 3.8 and 3.9
Exercises (3.8), page 181: 1, 10, 11, 15, 23, 25−29, 38
Exercises (3.9), page 187: 3, 4, 6, 8, 9, 10, 13, 14, 18, 20, 31, 34, 36

Lecture 20 Implicit Differentiation and Logarithmic Differentiation

Reading: Sections 3.9 and 3.10
Exercises (3.9), page 187: 23, 41, 44, 45, 46, 48
Exercises (3.10), page 192: 1, 3, 4, 10, 12, 15, 19, 20, 23, 33, 34, 36, 55, 59

Lecture 21 Related Rates

Reading: Section 3.11
Exercises (3.11), page 199: 1, 3, 5, 7, 10, 13, 14, 15, 16, 17, 19, 20, 21, 23, 26, 33

Lecture 22 Linear Approximations

Reading: Section 4.1
Exercises (4.1), page 213: 3, 9, 13, 14, 19, 21, 22, 25, 27, 28, 38, 41, 47, 52, 54, 57, 63, 66

Lecture 23 Extreme Values

Reading: Section 4.2
Exercises (4.2), page 222: 1, 5, 7, 13, 17, 18, 19, 21, 23, 31, 32, 40, 42, 47, 48, 54, 55, 63, 74, 86, 87

Lecture 24 Mean Value Theorem

Reading: Sections 4.2 and 4.3
Exercises (4.2), page 223: 65, 68, 69, 71
Exercises (4.3), page 232: 1, 2, 4, 5, 60, 63, 64

Lecture 25 First Derivative Test

Reading: Section 4.3
Exercises (4.3), page 232: 11−15, 19, 21, 26, 31, 35, 42, 46, 52, 53, 55

Lecture 26 Second Derivative Test

Reading: Section 4.4
Exercises (4.4), page 238: 1, 5, 7, 13, 16, 17, 20−23, 27, 33, 37, 41, 47, 55

Lecture 27 L'Hôpital's Rule

Reading: Section 4.5
Exercises (4.5), page 246: 6, 7, 8, 12, 13, 15, 16, 18, 25, 28, 29, 32, 35, 37, 43, 46, 48, 49, 50, 51, 59

Lecture 28 Graph Sketching

Reading: Section 4.6
Exercises (4.6), page 254: 5, 6, 25, 27, 29, 31, 34, 35, 36, 44, 52, 63, 67, 70

Lecture 29 Optimization Problems

Reading: Section 4.7
Exercises (4.7), page 262: 2, 4, 5, 6, 9, 12, 18, 19, 25, 26, 33, 39, 43, 59

Lecture 30 Antiderivatives

Reading: Section 4.9
Exercises (4.9), page 280: 3, 4, 5, 8, 17, 22, 23, 24, 25, 28, 29, 36, 37, 40, 43, 51, 56, 58, 67, 69, 70, 75

Lecture 31 Areas

Reading: Section 5.1
Exercises (5.1), page 296: 4, 9, 10, 16, 23, 25, 30, 33, 35, 37, 41−44, 46, 51, 61, 62, 71

Lecture 32 The Definite Integral

Reading: Section 5.2
Exercises (5.2), page 307: 3, 6, 7, 8, 11, 13, 14, 15, 23, 44, 45, 55−58, 59, 60, 71, 76, 82

Lecture 33 Fundamental Theorem of Calculus

Reading: Sections 5.3 and 5.4
Exercises (5.3), page 314: 13, 18, 19, 23, 24, 25, 28, 34, 37, 42, 43, 44, 47, 56
Exercises (5.4), page 320: 3, 11, 21, 22, 25, 28, 29, 30, 32, 33, 39, 45, 46

Lecture 34 Net Change Theorem

Reading: Section 5.5
Exercises (5.5), page 326: 1, 2, 5, 9, 10, 13, 15, 16, 19

Lecture 35 The Substitution Method

Reading: Sections 5.6 and 5.7
Exercises (5.6), page 333: 8, 9, 13, 14, 29, 31, 33, 38 ,40 ,46, 47, 48, 49, 53, 62, 64, 65, 69, 70, 71, 73, 81, 86, 89, 95, 96
Exercises (5.7), page 339: 6, 8, 11, 15, 18, 20, 21, 27, 40, 49, 62, 63, 68