

HOMEWORK FOR MATH 2250
Text: Hass, Weir, and Thomas, *University Calculus*
Spring, 2008

Section Topics and Recommended Exercises

Chapter 2: Limits and Continuity

- 2.1 Rates of Change and Tangents to Curves
§2.1: #1, 3, 7, 8, 11, 12, 15, 19
- 2.2 Limit of a Function and Limit Laws
§2.2: #1, 2, 3, 5, 9, 13, 19, 21, 22, 25, 27, 29, 34, 35, 36, 39, 42, 49, 57, 64, 68, 69, 85
- 2.4 One-Sided Limits and Limits at Infinity
§2.4: #1, 2, 7, 10, 12, 17, 19, 20, 21, 23, 25, 27, 34, 35, 39, 43, 47, 49, 51, 55, 69, 74
- 2.5 Infinite Limits and Vertical Asymptotes
§2.5: #1, 3, 9, 13, 14, 17, 18, 19, 23, 31, 35, 39, 42, 43, 44
- 2.6 Continuity
§2.6: #1–4, 5–10, 11, 12, 13, 19, 25, 35, 36, 39, 46, 47, 58
- 2.7 Tangents and Derivatives at a Point
§2.7: #1, 5, 7, 11, 13, 18, 23, 27, 28, 29, 30
Additional and Advanced Exercises: #4, 5, 6, 14, 21

Chapter 3: Differentiation

- 3.1 The Derivative as a Function
§3.1: #1, 3, 6, 9, 10, 13, 17, 27–30, 31, 33, 43, 44
- 3.2 Differentiation Rules for Polynomials, Exponentials, Products, and Quotients
§3.2: #1, 3, 5, 7, 11, 15, 17, 18, 21, 23, 24, 27, 28, 29, 33, 35, 39, 43, 47, 49, 50, 53, 58, 62, 63
- 3.3 The Derivative as a Rate of Change
§3.3: #1, 5, 7, 10, 11, 15, 17, 18, 21, 23, 26, 29
- 3.4 Derivatives of Trigonometric Functions
§3.4: #1, 5, 8, 9, 11, 13, 16, 20, 25, 27, 35, 37, 47
- 3.5 The Chain Rule and Parametric Equations [N.B. Skip parametric formula for d^2y/dx^2 .]
§3.5: #1, 3, 5, 9, 11, 15, 17, 19, 24, 27, 31, 35, 41, 45, 47, 50, 51, 55, 57, 59, 61, 71, 73, 81, 83, 86, 95, 99, 112, 115
- 3.6 Implicit Differentiation
§3.6: #1, 5, 11, 17, 19, 25, 39, 44, 51
- 3.7 Derivatives of Inverse Functions and Logarithms
§3.7: #3, 11, 13, 21, 25, 27, 29, 32, 41, 51, 57, 61, 64, 65, 91, 93, 95, 98
- 3.8 Inverse Trigonometric Functions
§3.8: #1, 3, 7, 21, 23, 30, 33, 34, 42, 43, 48, 54
- 3.9 Related Rates
§3.9: #1, 2, 3, 5, 7, 9, 10, 11, 13, 14, 15, 17, 18, 19, 22, 23, 25, 30, 31, 35

- 3.10 Linearization and Differentials
 §3.10: #3, 8, 11, 15, 16, 39, 43, 45, 53, 54, 56, 61, 62, [65]
 Additional and Advanced Exercises: #6, 8, 19, 20

Chapter 4: Applications of Derivatives

- 4.1 Extreme Values of Functions
 §4.1: #1–14, 15, 17, 19, 21, 25, 27, 29, 31, 33, 39, 41, 43, 49, 51, 55, 61, 66, 67, [70], 72
- 4.2 The Mean Value Theorem
 §4.2: #5, 6, 7, 9, 12, 13, 15, 19, 23, 25, 27, 31, 35, 39, 41, 45, 46, 59, 66a
- 4.3 Monotonic Functions and the First Derivative Test
 §4.3: #1, 3, 5, 7, 9, 13, 17, 21, 25, 31, 43, 47, 49, [58]
- 4.4 Concavity and Curve Sketching
 §4.4: #1, 3, 11, 15, 17, 21, 25, 30, 33, 37, 53, 59, 69; p. 309: #55, 57, 59
- 4.5 Applied Optimization
 §4.5: #1, 3, 4, 5, 7, 11, 12, 14, 20, [22], [24], [25], 27, 32, 33, 41, 44
- 4.6 Indeterminate Forms and L'Hôpital's Rule
 §4.6: #3, 5, 9, 15, 19, 21, 23, 25, 47, 51, 53, 61, 63
- 4.7 Newton's Method
 §4.7: #1, 3, 5, 13, 16
- 4.8 Antiderivatives
 §4.8: #1, 5, 7, 13, 15, 19, 23, 31, 33, 39, 43, 45, 55, 59, 61, 65, 87, 89, 91, 95, 103, 117, 118, 119, 120
 Additional and Advanced Exercises: #13, 15, 17, 22, 35

Chapter 5: Integration

- 5.1–5.2 Estimating with Finite Sums, Sigma Notation and Limits of Finite Sums
 §5.1: #1, 3, 5, 7, 11, 19, [21, 22]; §5.2: #1, 3, 7, 9, 13, 15, 19, 29, 35, 39
- 5.3 The Definite Integral
 §5.3: #1, 3, 5, 9, 11, 13, 17, 19, 27, 31, 35, 55, 59, 63, 65, 66, [77], [79], [82]
- 5.4 The Fundamental Theorem of Calculus
 §5.4: #1, 3, 5, 7, 9, 11, 17, 23, 27, 29, 33, 35, 39, 41, 43, 45, 47, 49, 53, 55, 58, 61–64, 73, 75
- 5.5 Indefinite Integrals and the Substitution Rule
 §5.5: #1, 3, 5, 7, 9, 13, 17, 19, 22, 23, 29, 39, 43, 49, 51, 61, 67
- 5.6 Substitution and Area Between Curves
 §5.6: #1, 3, 7, 13, 25, 27, 31, 39, 47, 51, 53, 55, 57, 67, 77, 81, 85, 89, 99, 103, [115, 116]
 Additional and Advanced Exercises: #4, 5, 6, 30, 31, 32, Leibniz's Rule, 47, 48, 55

Problems listed in brackets are best saved for the better students, as are the recommended “Additional and Advanced Exercises.”