

# Math 170 – Calculus I

## MATH 170 · SUGGESTED HOMEWORK · FALL 2019

Section	Exercises
Day One	→ Carefully RE-READ and UNDERSTAND the Syllabus ←
§ 0.1: Functions	1-3, 7, 9(a, d, e), 15, 16, 23, 25, 29, 31
§ 0.2: New Functions from Old	3, 5, 7, 10, 15, 29, 35, 41, 47, 53-56(just the diff quotient), 61, 63
§ 0.3: Families of Functions	1, 5(parameterized in $x_0$ ), 11, 15, 17, 19, 29, 31, 33(a, b) & Chapter Review: 1, 2, 11, 20
§ 0.4: Inverse Functions	1, 3, 5, 7, 10, 11, 14, 29, 38, 39, 41, 58
§ 0.5: Exp & Log Functions	1, 5, 6, 9, 10, 11, 13, 15, 16, 22, 23, 30, 32, 50, 57
§ 1.1: Limits, An Intuitive Approach (1)	1, 3, 5, 7, 9, 11, 17-20, 21
§ 1.1: Limits, An Intuitive Approach (2)	6, 8, 10, 23, 25, 26, 31
§ 1.2: Computing Limits (1)	1, 3-17(odd), 29, 32, 37, 41
§ 1.2: Computing Limits (2)	2, 6, 10, 16, 19, 21, 25, 31, 40
§ 1.3: Limits at Infinity (1)	1, 3, 5, 9, 15-25(odd), 33, 37
§ 1.3: Limits at Infinity (2)	4, 27, 29, 32, 35, 39
§ 1.5: Continuity (1)	1, 3, 11, 13, 17, 21, 29, 35(a, b)
§ 1.5: Continuity (2)	5, 7, 19, 31, 44, 45, 47
§ 1.6: Limits of Trig Functions (1)	1, 4, 12, 14, 17, 19, 21, 23, 27, 28, 31, 33, 37, 38, 49, 67
§ 1.6: Limits of Trig Functions (2)	6, 7, 24, 30, 32, 35, 40, 65 & Chapter 1 Review: 8, 10, 11, 15, 16
§ 2.1: Rates of Change	3, 11-14, 23, 24
§ 2.2: The Derivative (1)	1, 7-10, 13, 15(use defn 2.2.1), 21, 23, 25(a, c), 34
§ 2.2: The Derivative (2)	2, 3, 6, 14, 20(use defn 2.2.1), 29
Exam 1	
§ 2.3: Techniques of Differentiation	3, 5, 6, 7, 9-15(odd), 16, 18, 20, 23, 29, 37, 38, 39, 43, 45, 46
§ 2.4: The Product and Quotient Rules	1, 5, 7, 8, 11, 14, 15, 21, 23, 27, 29, 31, 33, 39
§ 2.5: Derivatives of Trig Functions	1, 5, 8, 11, 15, 17, 21, 24, 25(a, b), 27, 31, 43(a, c)
§ 2.6: The Chain Rule (1)	5, 9, 11, 15, 21, 23, 24, 27, 29, 35, 37, 45, 51, 75
§ 2.6: The Chain Rule (2)	20, 22, 26, 28, 39, 40, 49, 53, 56, 69, 77
§ 3.1: Implicit Differentiation (1)	1, 5, 9, 11, 13, 16, 17, 27
§ 3.1: Implicit Differentiation (2)	1, 5, 9, 11, 13, 16, 17, 27
§ 3.2: Derivatives of Log Functions	1, 3, 4, 7, 9, 10, 19, 21, 23, 27, 30, 35, 37, 41
§ 3.3: Derivatives of Exponential	15, 17, 18, 19, 23, 25, 43, 47, 50, 52, 54, 65, 72
§ 3.4: Related Rates (1)	1, 3, 5, 12, 15, 17, 22, 30, 37, 43

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Section	Exercises
§ 3.4: Related Rates (2)	4, 7, 18, 25, 27, 32, 33, 39 (use radians for any angles)
§ 3.5: Local Linear Approximation	3, 7, 9, 23, 25, 29, 31(angle is in degrees, you must convert; $(x - x_0)$ ), 32, 43
Exam 2	
§ 3.6: L'Hôpital's Rule (1)	2, 7 - 11, 13, 16, 19, 23, 25, 47, 57, 59
§ 3.6: L'Hôpital's Rule (2)	20, 27, 29, 32, 33, 36, 38, 58(a,c), 60
§ 3.6: L'Hôpital's Rule (3)	12, 17, 21, 26, 28, 43, 44
§ 4.1: Increase, Decrease, Concavity	1, 3, 5, 6, 7, 9, 15, 23, 25, 31, 39
§ 4.2: Relative Extrema (1)	5, 7, 9, 11, 19, 21-24, 27, 31, 37, 41, 43, 45, 53( $x=5$ is one zero)
§ 4.2: Relative Extrema (2)	29, 33, 47, 57
§ 4.3: Rational Functions (1)	3, 5, 25, 31, 33, 47
§ 4.3: Rational Functions (2)	11, 32, 35, 49, 65
§ 4.4: Absolute Extrema	1, 3, 9, 11, 12, 23, 31, 32, 33, 43
§ 4.5: Applied Max/Min Problems (1)	3, 5, 14, 19, 21, 23, 24, 26
§ 4.5: Applied Max/Min Problems (2)	22, 27, 29, 31, 33, 55, 58
§ 4.6: Rectilinear Motion	4, 13, 17(a, b, c), 19(a,b,c), 33
Exam 3	
§ 4.7: Newton's Method	3, 7, 9, 12(1 soln, use $x_1 = 1$ ), 17(2 solns, use $x_1 = -0.5$ , and $x_1 = 1.4$ )
§ 5.1: The Area Problem	7, 9 (just work $n=2, 5$ ; then setup $n=10$ ); 13, 15, 17
§ 5.2: The Indefinite Integral (1)	2, 5, 13, 17, 19, 25, 31, 32, 33, 43, 53 [check your answers by differentiating]
§ 5.2: The Indefinite Integral (2)	14, 17, 27, 29, 35, 46, 54, 69
§ 5.3: Integration by Substitution (1)	3, 11, 15, 25, 29, 33, 34, 39, 47, 49, 53, 55, 70, 71 [check your answers by differentiating]
§ 5.3: Integration by Substitution (2)	27, 35, 36, 37, 45, 54, 56, 72
§ 5.5: The Definite Integral	13, 15, 20, 22-24, 27, 33, 37
§ 5.6: Fundamental Theorem of Calculus	15, 17, 20, 21, 24, 26, 29, 59, 63
§ 5.9: Definite Integrals by Substitution (1)	5, 10, 15, 20, 22, 31, 33, 35, 41, 44, 45, 49, 53
§ 5.9: Definite Integrals by Substitution (2)	16, 17, 32, 34, 36, 40, 43, 50
§ 5.9: Definite Integrals by Substitution (3)	37, 42, 46, 48
Exam 4	