Competency Exam Review

(Pages refer to text: Calculus, Strauss, Bradley & Smith)

Section	Topics	Problems
3.1	Definition of the Derivative Limit of a Difference Quotient Interpretation of the Derivative Slope of the Tangent Line Instantaneous Rate of Change Equation of the Tangent Line	Page 108 22, 23, 26, 30, 32
3.2	Techniques of Differentiation Constant Function Power Function: x^n Constant Multiple Rule Sum Rule Linearity Rule Product Rule Quotient Rule Higher Order Derivatives Notation	Pages 117-118 11, 14, 15, 17, 18, 19, 25, 26, 28, 30, 32
3.3	Derivatives of Special Functions Trigonometric Functions sin x, cos x, tan x, sec x, cot x, csc x Exponential Function: e ^x Logarithmic Function: ln x	Page 125 3, 6, 7, 8, 10, 12, 15, 17, 20, 23, 25, 29, 31, 47, 49, 52
3.5	Chain Rule Extended Rules	Page 143 14, 16, 17, 19, 21, 22, 23, 24, 25, 27, 29, 30, 33, 35, 38
3.6	Implicit Differentiation Derivatives of Inverse Functions $\sin^{-1} x, \cos^{-1} x, \tan^{-1} x, \sec^{-1} x, \cot^{-1} x, \csc^{-1}$ x Derivatives of Exponential and Logarithm Functions with base <i>b</i> Logarithmic Differentiation	Page 155 2, 5, 6, 7, 12, 19, 23, 26, 34, 36
5.1	Anti-Differentiation Basic Integration Rules Theorem 5.2 (Page 275)	Page 281 3, 6, 9, 12, 15, 17, 19, 22, 25, 30
5.4	First Fundamental Theorem of Calculus Area Under a Curve Second Fundamental Theorem of Calculus	Page 308 3, 9, 10, 15, 16, 19, 20, 25, 26, 27, 31, 34, 39, 41, 42

5.5	Integration by Substitution Definite Integrals Change of Limits	Page 315 1, 3, 6, 8, 9, 14, 19, 22, 27, 30, 31, 35, 38, 403
6.1	Area Between Two Curves	Page 361 1, 3, 6, 8, 11, 14, 18, 20
7.1	Review of Substitution Use of Tables	Page 433-434 1, 4, 12, 14, 15, 17, 19, 25, 28, 42, 43
7.2	Integration by Parts Formula for Integration by Parts Repeated Integration by Parts	Page 439 1, 2, 3, 6, 7, 12, 17, 21, 26
7.3	Trigonometric Methods Powers of Sine and Cosine Powers of Tangent and Secant Trigonometric Substitution	Page 447 5, 8, 11, 14, 17, 21, 25, 26, 33, 36, 37, 41, 44, 48
7.4	Partial Fractions Decompositions Linear Factors Repeated Linear Factors Quadratic Factors	Page 455-456 1, 2, 3, 4, 5, 8, 9, 12, 15, 16, 17, 18, 19, 21, 23, 26, 31, 34, 38, 39, 41, 44
7.5	Summary of Integration Techniques	Page 460 1, 5, 9, 13, 17, 21, 27, 31, 35, 41, 45, 49, 66, 67, 71
7.7	Improper Integrals Infinite Limits of Integration	Page 479-480 3, 6, 8, 10, 12, 13, 15, 19, 25
8.4	Comparison Tests Direct Comparison Test Limit Comparison Test	Page 526 13, 15, 17, 21, 23, 25, 29, 34, 40
8.5	Ratio Test and Root Test	Page 532 3, 7, 11, 15, 21, 23, 29, 33
8.7	Power Series Radius of Convergence Interval of Convergence Term-by-term Differentiation Term-by-term Integration	Page 552 1, 5, 11, 15, 20, 21, 22, 27
8.8	Taylor and MacLaurin Series	Page 564 5, 7, 17, 21, 29
11.3	Partial Derivatives Notation Mixed Partials	Page 717 3, 5, 6, 8, 12, 17, 19, 21, 23, 25