# STANDARDS CHECKLIST

MATH 1560, FALL 2018

Chapter 1: Limits and continuity

(1) Explain the concept of a limit using graphical and numerical information. Grade: [1] [2] [3]

(2) Apply limit laws in an abstract setting (explicit functions not given). Grade: [1] [2] [3]

(3) Use algebraic manipulation to evaluate limits. Grade: [1] [2] [3]

(4) Evaluate limits involving trigonometric functions. Grade: [1] [2] [3]

(5) Algebraically and graphically determine one-sided limits. Grade: [1] [2] [3]

(6) Evaluate limits involving infinity. Grade: [1] [2] [3]

(7) Demonstrate continuity of a function using the definition. Grade: [1] [2] [3]

(8) Understand and apply the *Intermediate Value Theorem*. Grade: [1] [2] [3]

Chapter 2: Derivatives

(1) Understand and apply the limit definition of the derivative. Grade: [1] [2] [3]

(2) Understand and apply basic derivative rules (sum, constant, power). Grade: [1] [2] [3]

(3) Calculate derivatives using the product rule. Grade: [1] [2] [3]

(4) Calculate derivatives using the quotient rule. Grade: [1] [2] [3]

(5) Calculate derivatives using the chain rule. Grade: [1] [2] [3]

(6) Symbolically apply derivative rules in an abstract setting. Grade: [1] [2] [3]

(7) Use implicit differentiation to compute the equation of a tangent line. Grade: [1] [2] [3]

(8) Compute derivatives using logarithmic differentiation. Grade: [1] [2] [3]

(9) Compute derivatives of trigonometric and inverse trigonometric functions. Grade: [1] [2] [3]

Chapter 3: Graphical behaviour of functions

(1) Determine extreme values of a continuous function on a closed interval. Grade: [1] [2] [3]

(2) State the *Mean Value Theorem* and apply it to theoretical problems. Grade: [1] [2] [3]

(3) Determine intervals of increase/decrease; classify critical points. Grade: [1] [2] [3]

(4) Use the second derivative to determine concavity. Grade: [1] [2] [3]

(5) Produce an accurate sketch of the graph of a function. Grade: [1] [2] [3]

Chapter 4: Applications of the derivative

(1) Solve word problems involving related rates of change. Grade: [1] [2] [3]

(2) Solve word problems involving optimization. Grade: [1] [2] [3]

(3) Use linear approximations to estimate function values. Grade: [1] [2] [3]

(4) Compute the Taylor polynomial of a function to a specified degree. Grade: [1] [2] [3]

(5) Quantify the error involved in a Taylor polynomial approximation. Grade: [1] [2] [3]

Chapter 5: Integration

(1) Compute antiderivatives and solve initial value problems. Grade: [1] [2] [3]

(2) Understand and apply properties of definite integrals. Grade: [1] [2] [3]

(3) Use a left- or right-endpoint Riemann sum to approximate area. Grade: [1] [2] [3]

(4) Calculate a definite integral using the Riemann sum definition. Grade: [1] [2] [3]

(5) Use Part I of the FTC to compute derivatives. Grade: [1] [2] [3]

(6) Use Part II of the FTC to evaluate simple definite integrals. Grade: [1] [2] [3]

(7) Use substitution to evaluate definite and indefinite integrals. Grade: [1] [2] [3]

(8) Set up and evaluate a definite integral to compute area between curves. Grade: [1] [2] [3]