UNIVERSITY
OF WYOMING

Math 2200—Spring 2020

Department of
Mathematics

Calculus I

Exam I Study Guide

Exam I (5:15-7pm, Thursday February 20, 2020) is based on Sections 2.1–2.6 and 3.1 of the textbook. The following skills are considered important preparation for the Exam.

Problem Type	Textbook Examples
Given slopes of secant lines for a function f, estimate $f'(a)$ (i.e. the slope of the line tangent to the graph of f) at a point a.	§2.1: 7–11.
Use algebra and limit laws to evaluate limits.	§2.3: 33–46.
Given a piecewise defined function, find left and right limits at points in the domain, determine whether the limit exists at these points, and determine whether the function is continuous at these points.	§2.3: 15–16, §2.6: 17–24.
Apply the Squeeze Theorem to determine limits of functions bounded by other functions.	§2.3: 81–84.
Identify vertical asymptotes of rational functions and analytically determine left and right limits (including $\pm\infty$) at these points.	§2.4: 21–22.
Analytically find limits at $\pm\infty$ of rational functions and identify horizontal asymptotes.	§2.5: 37–43.
Use the Intermediate Value Theorem to show that an equation of the form $f(x) = L$ (where L is a given constant) has at least one solution in a given interval.	§2.6: 67–69, 74–76.
Calculate the derivative of a function at a point using the definition of derivative (that is, not using differentiation rules).	§3.1: 15–19, 24–28.
Given the definition of a derivative of a function f at a point a, identify the function f and the point a.	§3.1: 56–59.
Given the values of a function $f(a)$ and its derivative $f'(a)$ at some value $x = a$, determine the equation of the line tangent to the graph of the function at that point.	§3.1: 15–19, 24–28.