

Math 135, Calculus 1, Fall 2020

Written Homework 11-20

Directions: Write your solutions neatly and clearly, and submit to Canvas. In these problems, write in complete mathematical "sentences", writing complete English sentences when you explain your logic. You are free (and encouraged!) to work with others, but make sure the solutions you write up your solutions independently. You must show all work, and follow the instructions as written.

Exercise 1. If a ball is thrown vertically upward with a velocity of 80 ft/s, then its height after t seconds is $s(t) = 80t - 16t^2$.

- On what closed time interval $[a, b]$ is the ball at or above ground level?
- Use the Extreme Value Theorem to compute the maximum height of the ball.
- What is the velocity of the ball when it is 96 ft above the ground on its way up? On its way down?

Exercise 2. Consider the function $g(x) = \frac{x^2}{(x-2)^2}$.

- Find the critical points of $g(x)$.
- Find the intervals of increase and decrease for $g(x)$.
- Use the First Derivative Test to classify each critical point as a local max, local min, or neither.