Calculus 1, Handwritten Homework 6 — Spring 2022

NAME _____ STUDENT NUMBER _____

Write in complete sentences and use correct notation (such as equal signs and square bracket notation). Give justifications for your claims using the definitions and theorems in the notes and book (quote them by name or number, as is done in the examples in the notes and videos, and in the solutions posted online). Give precise values, not numerical (calculator) approximations. If provided, put your final answer in the box. Each numbered problem is worth 5 points. Print out this document, work the problem, scan your solutions, and submit the scan of (in PDF) to the D2L DropBox by the deadline. See the online syllabus for deadlines. **Do not copy work from others or from the internet! This will result in you being charged with academic misconduct.**

1. Consider $f(x) = e^x \dfrac{3x + \tan x}{x \sec x}$. Find the derivative $f'(x)$. Use the rules of differentiation (the Product Rule and Quotient Rule) and the square bracket notation. Do not simplify, just leave your answer in terms of products, quotients, and square brackets.

2. Consider $y = \sqrt{3t + \sqrt{2 + \sqrt{1 - t}}}$. Find the derivative dy/dt. Use the rules of differentiation (the Product Rule, Quotient Rule, and Chain Rule), the square bracket notation, and the "little arrow" notation for the Chain Rule. Do not simplify, just leave your answer in terms of products, quotients, and square brackets. This is Exercise 70 in Section 3.6.

3. Find the equation of the line tangent to $y = ((x-1)/(x+1))^2$ at $x = 1$.