

Calculus 1, Handwritten Homework 8 — Spring 2022

NAME _____ STUDENT NUMBER _____

Write in complete sentences and use correct notation (such as equal signs). 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 $\sin^{-1}(x + y) + \cos^{-1}(x - y) = 5\pi/6$. Find dy/dx at the point $(0, 1/2)$. Use the square bracket notation. This is Exercise 44 in Section 3.9

- 2, 3.** On a morning of a day when the sun will pass directly overhead, the shadow of an 80-ft building on level ground is 60 ft long. At the moment in question, the angle θ the sun makes with the ground is increasing at the rate of $0.27^\circ/\text{min}$. At what rate is the length of the shadow decreasing? Use radians and express your answer in inches per minute, to the nearest tenth. Follow the 6 steps in the Related Rates Problem Strategy. This is Exercise 40 in Section 3.10.

