Calculus 1, Handwritten Homework 14 — Spring 2022

NAME _____ STUDENT NUMBER _____

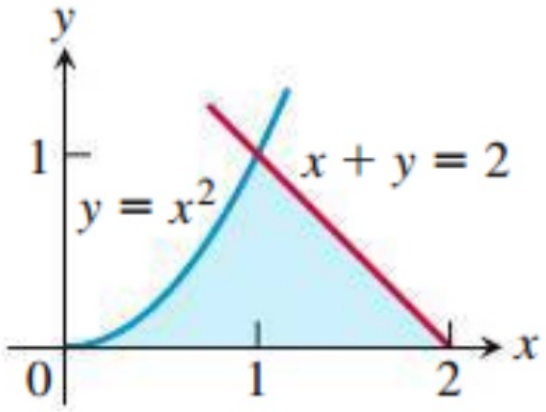
Write in complete sentences and use correct notation (such as equal signs and integral signs). Give justifications for your claims using the definitions and theorems in the notes and book (quote them by name or number, as is done in the examples in the notes and videos, and in the solutions posted online). 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(a). Evaluate using The Substitution Rule (Theorem 5.6): $\int \frac{1}{\sqrt{t}} \cos(\sqrt{t}+3)\, dt$. This is Exercise 34 of Section 5.5.

1(b). Evaluate using The Substitution Rule (Theorem 5.6): $\int \sqrt{\dfrac{x^4}{x^3-1}}\,dx$. This is Exercise 42 in Section 5.5.

2(a). Evaluate using The Substitution Rule (Theorem 5.6): $\int \dfrac{e^{\cos^{-1} x}\,dx}{\sqrt{1-x^2}}$. This is Exercise 62 in Section 5.5.

2(b). Find the total area of the shaded region. This is Exercise 60 of Section 5.6.



3. Find the area bounded by $x - y^{2/3} = 0$ and $x + y^4 = 2$. This is Exercise 80 of Section 5.6.