

Full Name:

ID:

Serial number:

Question 1 Use the method of Cylindrical Shells to find the volume of the solid obtained from rotating the region bounded $y = e^{-x}$, $y = e^{-1}$, and the y-axis about the line $y = e$. (DON NOT EVALUATE THE INTEGRAL)

Question 2 Evaluate the following integrals:

a) $\int_0^{\pi/2} \sec x \, dx$

$$b) \int \frac{3x}{4x^2 + 4x + 5} dx$$

$$c) \int \cot^5 x \sin^7 x dx$$

$$d) \int \sin(\ln x) dx$$

$$e) \int \frac{x}{\sqrt{3 - x^2 + 2x}} dx$$