

Full Name:
Section:

ID:

Question 1 Use cylindrical shells to set up the integral for finding the volume of the solid obtained by rotating the region in the first quadrant bounded by $y = x$ and $y = x^3$:

(DO NOT EVALUATE THE INTEGRALS)

a) about the x-axis,

b) about the line $x = 2$.

Question 2 Evaluate the following integrals:

a) $\int \frac{\sqrt{x^2-4}}{x} dx$

b) $\int \sin^{3/2}(x) \cos^3(x) dx.$

Question 3 Find the average value of the function $f(x) = x \tan^{-1} x$ on the interval $[-1, 1]$.