Quiz #2

MATH 126-102 — Calculus II
Thursday, Sept 3, 2026

Please print your name:

Problem 1. Consider the region bounded by the curves $y=\sqrt{x}$, $y=0$ and $x=1$. Determine the area of this region.

Solution.

- First, you should make a sketch!
- Our region extends from $x=0$ to $x=1$ (no real need to compute intersections), so the area of our region is

$$\int_0^1 \sqrt{x}\,\mathrm{d}x = \left[\frac{2}{3}x^{3/2}\right]_0^1 = \frac{2}{3}.$$

Problem 2. As in the previous problem, consider the region bounded by the curves $y=\sqrt{x}$, $y=0$ and $x=1$. Determine the volume of the solid generated by revolving this region about the x-axis.

Solution.

- Again, make a sketch first! (Or, in this case, refer to the earlier sketch.)
- Again, our region extends from $x=0$ to $x=1$, so the volume of our solid is

$$\int_0^1 \pi(\sqrt{x})^2\,\mathrm{d}x = \pi\int_0^1 x\,\mathrm{d}x = \pi\left[\frac{1}{2}x^2\right]_0^1 = \frac{\pi}{2}.$$

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