Math 212--Calculus II   SP24

revise

Office Assessment v1

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LT4: I can compute the volume of a solid using integrals, whether the solid is generated by rotating a function around the x-axis or the y-axis.

1. The region bounded by the curves $y = ln(x + 1)$, $y = \sqrt{x}$, the y-axis, and the line $x = 1$ is rotated around the **x-axis**.

$y = \sqrt{x}$

$y = ln(x + 1)$

Respect to y

is this Δx or Δy if I rotate around the x-axis and slice up?
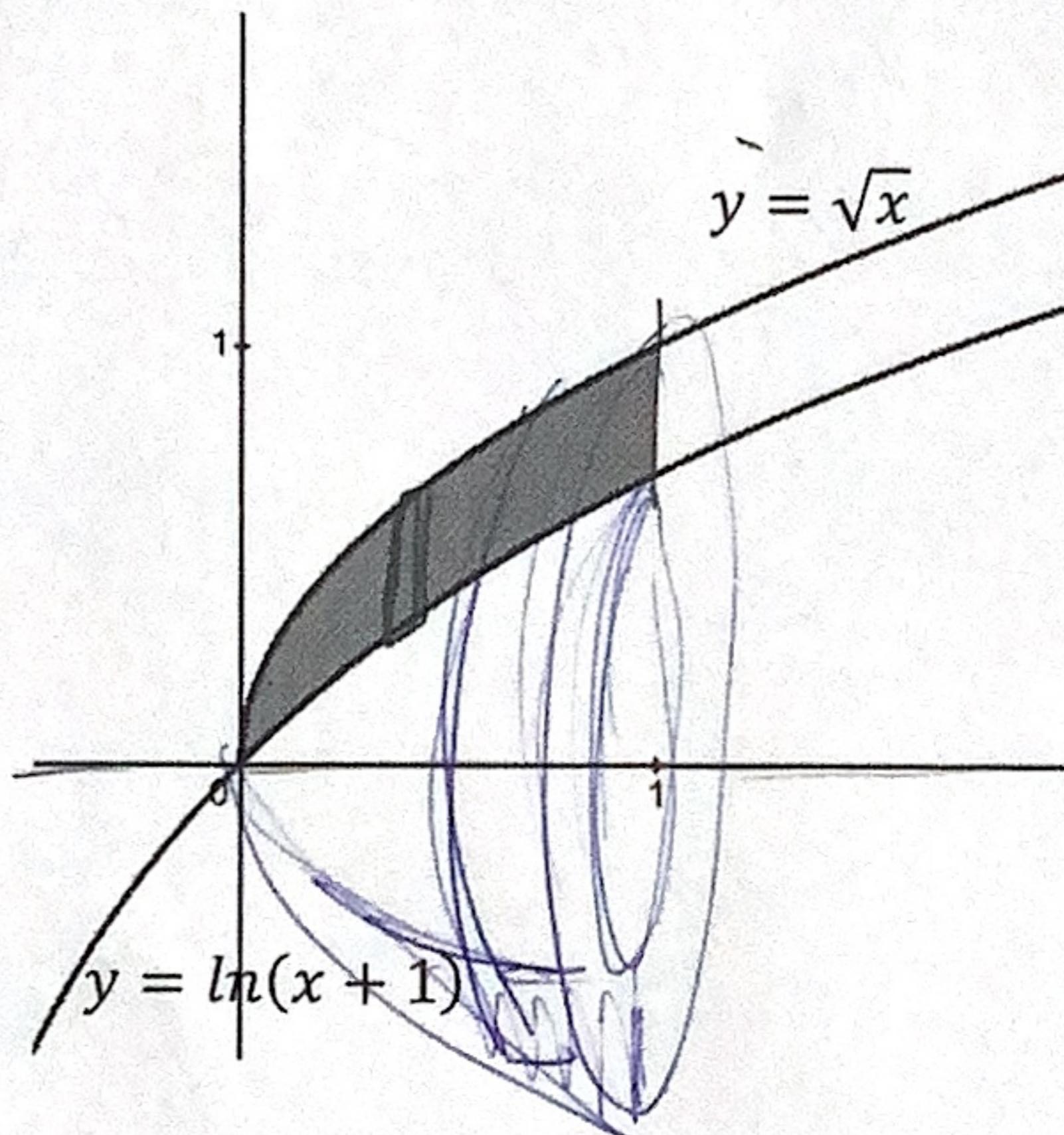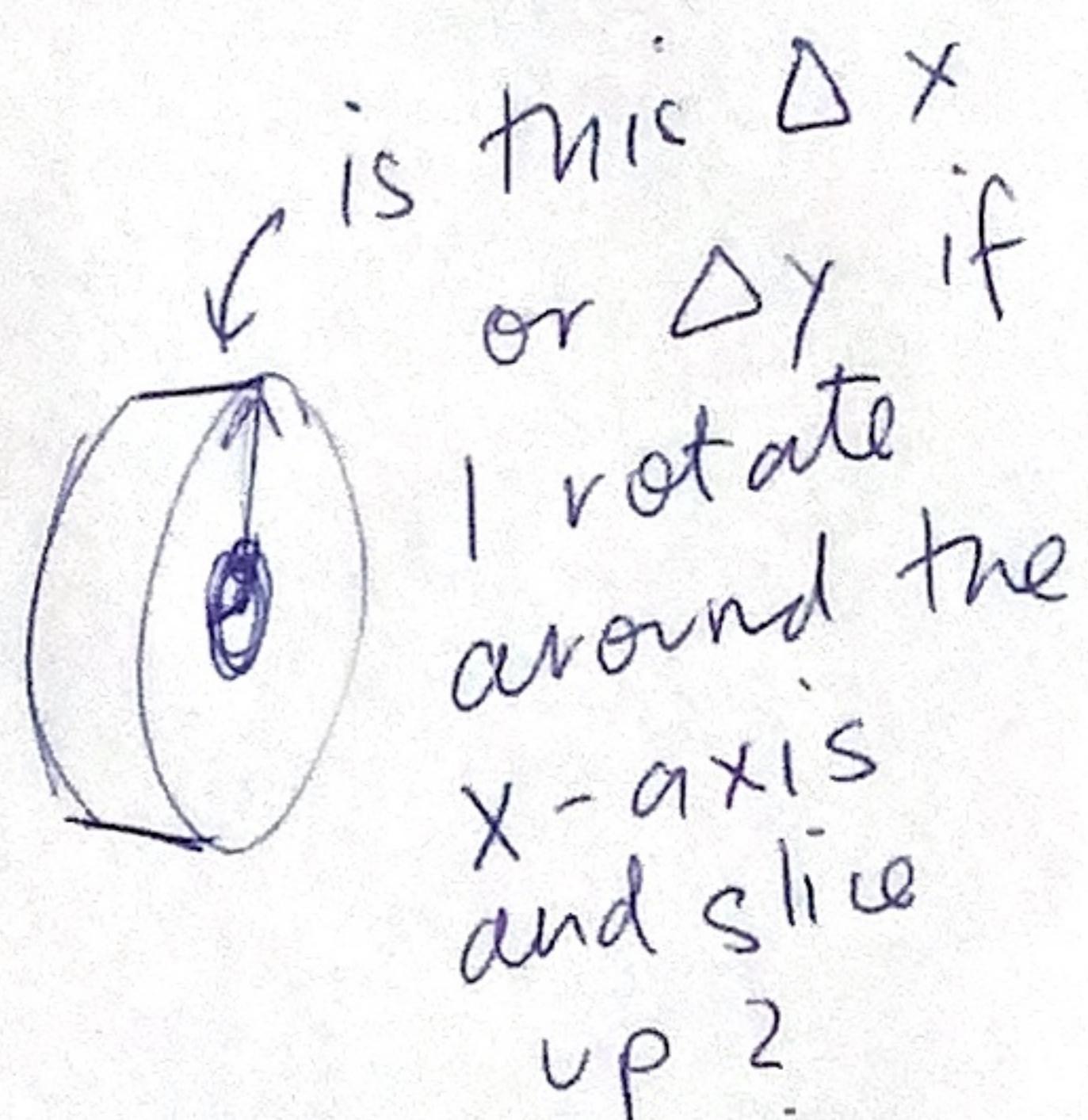
a. Write the **definite integral** that gives the volume of the solid. <u>You do not need to evaluate it.</u>

Outer $(y^2 = (\sqrt{x})^2 \rightarrow y^2 = x$

Inner $y = ln(x+1) \rightarrow e^{y+1}$

$$\int_0^1 \pi (y^2)^2 - (e^{y+1})^2 \, dy$$