

1. VOLUME PROBLEMS

Set up the integrals for the following problems. Include sketches. You do not need to solve the integrals.

1. The volume of the solid generated by rotation the region bounded by $y = 2^x$, $y = 0$ between $x = 0$ and $x = 3$ around the x -axis.

2. The volume of the solid generated by rotation the region in quadrant I bounded by $y = \sin x$ and $y = \cos x$ around the x -axis.

3. The volume of the solid generated by rotation the region bounded by $y = e^{2x}$, $y = 4$, and $x = 0$ around the y -axis.

4. The volume of the solid generated by rotation the region in quadrant I bounded by $y = x^2 + 2$, $y = 11$, and $x = 1$ around

A. The line $y = 11$

B. The line $y = -3$

C. The line $x = 3$.

5. The volume of the solid whose base is the region in the xy -plane that is bounded by $y = x^2$ and $y = 4 - x^2$. All cross sections perpendicular to the x -axis are squares with one side in the xy -plane.