

LAB QUIZ 2

1.

Which option below is an integral which equals the volume of the solid of revolution formed when the area between the curves $y = \sqrt{4x}$ and $y = 2x^3$ and between the lines $x = 0$ and $x = 1$ is rotated about the line $x = 3$? (Exactly one option must be correct)

- a) $\int_0^2 2\pi x(\sqrt{4x} - 2x^3) dx$
 - b) $\int_0^1 4\pi(3-x)(\sqrt{x} - x^3) dx$
 - c) $\int_0^2 2\pi(3-x)(\sqrt{x} - x^3) dx$
 - d) $\int_0^1 2\pi(3-x)(x^3 - \sqrt{x}) dx$
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2.

Use the shell method to find the volume of the solid formed when the area enclosed by the curves $y = x^2 - 4x + 3$ and $y = -x^2 + 2x + 3$ is rotated about the y -axis.

A. 9π

B. 18π

~~C.~~ 27π

~~D.~~ 54π

3.

The base of a solid is the region bounded by the circle $x^2 + y^2 = 1$. Find the volume of the solid given that the cross sections perpendicular to the x-axis are equilateral triangles.

- A. $2\sqrt{3}/3$ B. $4\sqrt{3}/3$ C. $\sqrt{3}/3$ D. $5\sqrt{3}/3$ E. $\sqrt{3}/6$ F. None

4.

Find the volume of the solid formed by revolving the region bounded by $y = \cos(x)$, $y = \sin(x)$, $x=0$, $x = \pi/4$ around the x-axis.

- a. 2π
- b. $\frac{\pi}{2}$
- c. $1/2$
- d. $\frac{\pi}{4}$
- e. π

5. Which of the integrals represents the volume generated by the region between the curves $y=x^2$, $y=0$ and x from 0 to 1 and is rotated about $y=-2$ which of the following represents the integral by shell and Disc respectively.

Shell

- (a) $2\pi \int_0^1 (2+y)(1-\sqrt{y}) dy$
 (b) $2\pi \int_0^1 (2+y)(1-\sqrt{y}) dy$
 (c) $2\pi \int_0^1 (2+x)(1-x^2) dx$
 (d) $2\pi \int_0^1 (1-x)(2-x^2) dx$

Disc

- $\pi \int_0^1 ((x^2+2)-2) dx$
 $\pi \int_0^1 ((x^2+2)^2 - 4) dx$
 $\pi \int_0^1 ((x^2+2)^2 - 4) dx$
 $\pi \int_0^1 ((x^2+2)^2 + 4) dx$