

Name _____

Calculus: Area/Volume Sudoku

Complete the problems on the other half. Enter the numbers into the puzzle corresponding to answers of the lettered problems. Then, complete the Sudoku puzzle using the following:

You must fill each row, column, and 3×3 box with the numbers 1 to 9 such that:

- Each number can appear only once in each row.
- Each number can appear only once in each column.
- Each number can appear only once in each 3×3 box.
- There is only one solution for this puzzle.

			8		7	3	^D	
8	^E			^F		7		
	2	7				4		
^C			5	2		^B		3
		9	4		1	5		
2		1		^H	3			4
		2				6	5	
		5		^G			4	^A
	8	^I	7		5			

Clues:

- A. Find the area of the region bounded by the curves $y = x^2$ and $x = y^2$.
(5) $\frac{1}{6}$ (6) $\frac{1}{4}$ (7) $\frac{1}{9}$ (8) $\frac{1}{3}$ (9) $\frac{1}{2}$
- B. Find the volume of the solid obtained when the region bounded by the lines $y = x$, $x = 3$, and the x-axis is rotated about the y-axis.
(1) 18π (2) 24π (3) 36π (4) 27π (5) 36π
- C. Find the volume of the solid obtained when the region bounded by the curve $x = y^2$ and the line $x = 4$ is rotated about the x-axis.
(4) 4π (5) 6π (6) 8π (7) 9π (8) 12π
- D. Find the volume of the solid obtained by rotating the region bounded by the curves $y = x$ and $y = x^2$ about the line $y = 2$.
(1) $\frac{4\pi}{15}$ (2) $\frac{8\pi}{15}$ (3) $\frac{2\pi}{3}$ (4) $\frac{3\pi}{5}$ (5) $\frac{\pi}{5}$
- E. Find the volume of the solid obtained when the region bounded by $y - x = 3$, the x-axis, and the y-axis is rotated about the x-axis.
(5) 3π (6) 4π (7) 6π (8) 8π (9) 9π
- F. The region bounded by the curves $y = x - x^2$ and $y = 0$ is rotated about the y-axis. Find the volume of the resulting solid.
(4) $\frac{\pi}{12}$ (5) $\frac{\pi}{6}$ (6) $\frac{\pi}{4}$ (7) $\frac{\pi}{3}$ (8) $\frac{\pi}{2}$
- G. Find the volume of the solid generated when the region bounded by the y-axis, $y = e^x$, and $y = 2$ is rotated around the y-axis.
(1) 2.427 (2) 3.998 (3) 0.592 (4) 27.577 (5) 0.296
- H. The area bounded by the curve $x = 3y - y^2$ and the line $x = -y$ is represented by
(4) $\int_0^4 (2y - y^2) dy$ (5) $\int_0^4 (y^2 - 4y) dy$ (6) $\int_0^3 (2y - y^2) dy$
(7) $\int_0^4 (4y - y^2) dy$ (8) $\int_0^3 (3y - y^2) dy + \int_0^4 y dy$
- I. Find the average value of the function $f(x) = \sin x$ on $[0, \pi]$.
(2) 2π (3) 4π (4) $\frac{2}{\pi}$ (5) $\frac{4}{\pi}$ (6) π