

Calculus Honors

Chapter 7 Review #1

39. The base of a solid is the region enclosed by the graph of $y = e^{-x}$, the coordinate axes, and the line $x = 3$. If all plane cross sections perpendicular to the x -axis are squares, then its volume is

(A) $\frac{(1 - e^{-6})}{2}$ (B) $\frac{1}{2}e^{-6}$ (C) e^{-6} (D) e^{-3} (E) $1 - e^{-3}$

25. The base of a solid is the region in the first quadrant enclosed by the parabola $y = 4x^2$, the line $x = 1$, and the x -axis. Each plane section of the solid perpendicular to the x -axis is a square. The volume of the solid is

(A) $\frac{4\pi}{3}$ (B) $\frac{16\pi}{5}$ (C) $\frac{4}{3}$ (D) $\frac{16}{5}$ (E) $\frac{64}{5}$

1. The area of the region in the first quadrant enclosed by the graph of $y = x(1 - x)$ and the x -axis is

(A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{5}{6}$ (E) 1

21. The area of the region enclosed by the graphs of $y = x$ and $y = x^2 - 3x + 3$ is

(A) $\frac{2}{3}$ (B) 1 (C) $\frac{4}{3}$ (D) 2 (E) $\frac{14}{3}$

29. The region R in the first quadrant is enclosed by the lines $x = 0$ and $y = 5$ and the graph of $y = x^2 + 1$. The volume of the solid generated when R is revolved about the y -axis is

(A) 6π (B) 8π (C) $\frac{34\pi}{3}$ (D) 16π (E) $\frac{544\pi}{15}$

6. The area of the region enclosed by the curve $y = \frac{1}{x-1}$, the x -axis, and the lines $x = 3$ and $x = 4$ is

(A) $\frac{5}{36}$ (B) $\ln \frac{2}{3}$ (C) $\ln \frac{4}{3}$ (D) $\ln \frac{3}{2}$ (E) $\ln 6$

30. What is the volume of the solid generated by rotating about the x -axis the region enclosed by the curve $y = \sec x$ and the lines $x = 0$, $y = 0$, and $x = \frac{\pi}{3}$?

(A) $\frac{\pi}{\sqrt{3}}$
(B) π
(C) $\pi\sqrt{3}$
(D) $\frac{8\pi}{3}$
(E) $\pi \ln \left(\frac{1}{2} + \sqrt{3} \right)$

30. The region enclosed by the x -axis, the line $x = 3$, and the curve $y = \sqrt{x}$ is rotated about the x -axis. What is the volume of the solid generated?
- (A) 3π (B) $2\sqrt{3}\pi$ (C) $\frac{9}{2}\pi$ (D) 9π (E) $\frac{36\sqrt{3}}{5}\pi$
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23. The area of the region bounded by the curve $y = e^{2x}$, the x -axis, the y -axis, and the line $x = 2$ is equal to
- (A) $\frac{e^4}{2} - e$ (B) $\frac{e^4}{2} - 1$ (C) $\frac{e^4}{2} - \frac{1}{2}$
(D) $2e^4 - e$ (E) $2e^4 - 2$
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35. The region in the first quadrant bounded by the graph of $y = \sec x$, $x = \frac{\pi}{4}$, and the axes is rotated about the x -axis. What is the volume of the solid generated?
- (A) $\frac{\pi^2}{4}$ (B) $\pi - 1$ (C) π (D) 2π (E) $\frac{8\pi}{3}$
1. The area of the region between the graph of $y = 4x^3 + 2$ and the x -axis from $x = 1$ to $x = 2$ is
- (A) 36 (B) 23 (C) 20 (D) 17 (E) 9
34. The area of the region in the first quadrant that is enclosed by the graphs of $y = x^3 + 8$ and $y = x + 8$ is
- (A) $\frac{1}{4}$ (B) $\frac{1}{2}$ (C) $\frac{3}{4}$ (D) 1 (E) $\frac{65}{4}$
45. The region enclosed by the graph of $y = x^2$, the line $x = 2$, and the x -axis is revolved about the y -axis. The volume of the solid generated is
- (A) 8π (B) $\frac{32}{5}\pi$ (C) $\frac{16}{3}\pi$ (D) 4π (E) $\frac{8}{3}\pi$
15. The area of the region bounded by the lines $x = 0$, $x = 2$, and $y = 0$ and the curve $y = e^{\frac{x}{2}}$ is
- (A) $\frac{e-1}{2}$ (B) $e-1$ (C) $2(e-1)$ (D) $2e-1$ (E) $2e$
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Answers

39 A

25 D

1 A

21 C

29 B

6 D

30 C

(YES THERE ARE TWO #30'S IN A ROW AND THEY'RE BOTH "C")

30 C

23 C

35 C

1 D

34 A

45 A

15 C