

1. The base of a solid is a the region between the x – axis, $y = 2\sqrt{x}$, $x = \sqrt{2}$,
Each cross section perpendicular to the x – axis is an equilateral triangle.
Find the volume.

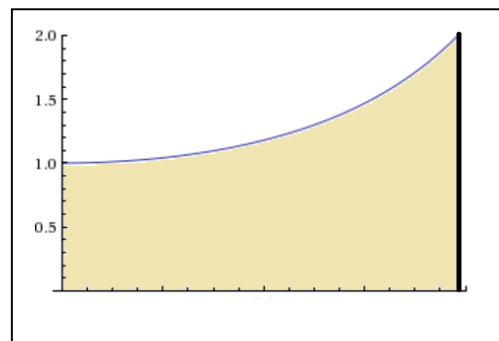
- (A) $\sqrt{3}$ (C) $2\sqrt{3}$ (E) $\sqrt{2}$ (G) $2\sqrt{2}$
(B) $\frac{\sqrt{3}}{2}$ (D) 2 (F) $3\sqrt{2}$ (H) None of these

2. Find the volume of the solid generated by revolving the region bounded
above by $y = 4x - x^2$ and bounded below $y = x^2$ about the line $x = 4$.

- (A) $\frac{\pi}{2}$ (C) $\frac{\pi}{6}$ (E) $\frac{\pi}{3}$ (G) 16π
(B) 4π (D) $\frac{4\pi}{3}$ (F) 12π (H) None of these

3. Find the volume of the solid generated by revolving the region
bounded by $y = \sec^2 x$, $x = 0$, $y = 0$ and $x = \frac{\pi}{4}$ axis about the x – axis.

- (A) $\frac{\pi}{2}$ (C) $\frac{\pi}{6}$ (E) $\frac{\pi}{3}$ (G) 16π
(B) 4π (D) $\frac{4\pi}{3}$ (F) 12π (H) None of these



4. Let $y = \frac{\sqrt{5}}{15} (5x^2 + 2)^{3/2}$. Find the arclength for $0 \leq x \leq 3$.

- (A) 29 (C) 36 (E) 48 (G) 64
(B) 34 (D) 40 (F) 54 (H) None of these

5. Evaluate

$$\int_{\sqrt{e}}^e 3x^{-2} \ln(x) dx$$

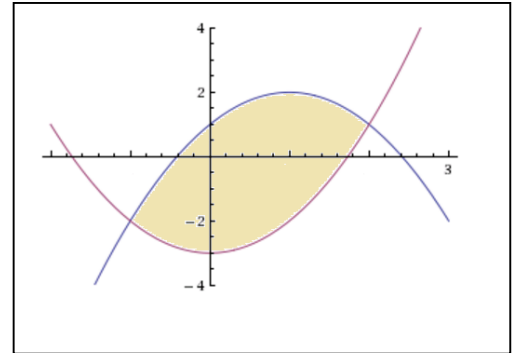
- (A) 8 (C) 6 (E) 4 (G) 3
(B) 2 (D) $\frac{3}{2}$ (F) 1 (H) None of these

6. Find the surface area generated by revolving the curve $y = 3x^{1/3}$ for $0 \leq x \leq 3^{3/4}$ about the y -axis.

- (A) π (C) 2π (E) 4π (G) 144π
(B) 7π (D) 3π (F) 36π (H) None of these

7. Find the x coordinate of the center of mass of the lamina with constant density $\rho = 2016$ bounded by the graphs of $y = x^2 - 3$ and $y = -x^2 + 2x + 1$.

- (A) 1 (C) $\frac{1}{3}$ (E) $\frac{1}{4}$ (G) $\frac{1}{2}$
(B) $\frac{3}{4}$ (D) $\frac{5}{8}$ (F) $\frac{3}{5}$ (H) None of these



ANSWERS:

1. A

2. G

3. D

4. E

5. H

6. B

7. G