1. Find the volume of the solid that lies between planes perpendicular to the $x-$ axis at $x = 0$ and $x = 1$. The cross sections of the solid perpendicular to the $x-$ axis between these planes are semicircles whose diameters run from the curve $y = x^3$ to the curve $y = x$.

(A) $\dfrac{\pi}{16}$ (C) $\dfrac{\pi}{60}$ (E) $\dfrac{\pi}{40}$ (G) $\dfrac{\pi}{105}$

(B) $\dfrac{\pi}{80}$ (D) $\dfrac{\pi}{24}$ (F) $\dfrac{\pi}{240}$ (H) $\dfrac{\pi}{120}$

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2. Find the volume of the solid generated by revolving the region bounded by $y = x^2 + 1, x = 0,$ and $y = 2$ about the line $y = 2$

(A) $\dfrac{4\pi}{5}$ (C) $\dfrac{8\pi}{15}$ (E) $\dfrac{12\pi}{5}$ (G) $\dfrac{4\pi}{15}$

(B) $\dfrac{7\pi}{10}$ (D) $\dfrac{2\pi}{3}$ (F) $\dfrac{2\pi}{15}$ (H) $\dfrac{2\pi}{5}$

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3. Find the volume of the solid generated when the region bounded by $y = x^2 + 1, \; y = -x + 1$ and $x = 1$ is revolved about the $y-$ axis.

(A) 1   (C) $\dfrac{\pi}{2}$ (E) $\dfrac{7\pi}{6}$ (G) $\dfrac{\pi}{8}$

(B) π (D) $\dfrac{\pi}{6}$ (F) $\dfrac{\pi}{4}$ (H) $\dfrac{5\pi}{6}$

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4. Find the arclength of the curve $y = 2x^{3/2} + 3$ from $x = 0$ to $x = 7$.

(A) $\dfrac{2}{3}$ (C) $\dfrac{511}{9}$ (E) $\dfrac{244}{9}$ (G) $\dfrac{112}{3}$

(B) $\dfrac{1022}{27}$ (D) $\dfrac{326}{9}$ (F) $\dfrac{489}{27}$ (H) $\dfrac{4258}{81}$

5. Find the area of the surface generated by revolving the curve

$x = \sqrt{9 - y^2}$ for $-1 \le y \le 1$ about the $y-$axis.

(A) 2π (C) 4π (E) 8π (G) 12π

(B) π (D) 24π (F) 36π (H) 15π

6. Find the volume generated when the region bounded by $y = 2 + \sqrt{x-1}, x = 2, x = 5,$ and $y = 2$ is rotated about the $x-$axis .

(A) $\dfrac{17\pi}{6}$ (C) $\dfrac{11\pi}{2}$ (E) $\dfrac{15\pi}{2}$ (G) 40π

(B) 24π (D) $\dfrac{145\pi}{6}$ (F) $\dfrac{151\pi}{6}$ (H) $\dfrac{157\pi}{6}$

7. Find the x-coordinate of the centroid of the region bounded by the graph of $y = x$ and $y = \sqrt{x}$.

(A) 2/5   (E) 4/7
(B) 4/9   (F) 5/11
(C) 1/5   (G) 1/2
(D) 7/15   (H) 6/11

Problem	Answer
1	G
2	C
3	E
4	B
5	G
6	H
7	A