

Cavalieri's Principle - Matching Worksheet

Write the letter of the answer that matches the problem.

- | | | | |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------|
| _____ | 1. Calculate the volume of a "dumble" with circular cross-sectional area equal to $\pi\sqrt[7]{x^6}$ above x in the interval $[0, 1]$. | a. | $\frac{5\pi}{17}$ |
| _____ | 2. Let $A(x) = \sqrt[16]{x^7}$ describes the area of a cross-section of a wood at x (perpendicular to the x -axis). Find the volume of wood from $x=0$ to $x=1$. | b. | $\frac{3}{19}$ |
| _____ | 3. Calculate the volume of the "water glass" with circular cross-sectional area equal to $\pi\sqrt[3]{x^7}$ above x in the interval $[0, 1]$. | c. | $\frac{5}{14}$ |
| _____ | 4. Let $A(x) = \sqrt[5]{x^9}$ describes the area of a cross-section of a cylinder at x (perpendicular to the x -axis). Find the volume of cylinder from $x=0$ to $x=1$. | d. | $\frac{9\pi}{11}$ |
| _____ | 5. Calculate the volume of the "cube" with circular cross-sectional area equal to $\pi\sqrt[9]{x^2}$ above x in the interval $[0, 1]$. | e. | $\frac{8\pi}{15}$ |
| _____ | 6. Let $A(x) = \sqrt[3]{x^{16}}$ describes the area of a cross-section of a pipe at x (perpendicular to the x -axis). Find the volume of pipe from $x=0$ to $x=1$. | f. | $\frac{16}{23}$ |
| _____ | 7. Calculate the volume of the "metal bolt" with circular cross-sectional area equal to $\pi\sqrt[5]{x^{12}}$ above x in the interval $[0, 1]$. | g. | $\frac{7\pi}{13}$ |

