



Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Use the disk method to find volumes of revolution. ✓ Set up $V = \pi \int [f(x)]^2 dx$. ✓ Evaluate volume integrals.
- ✓ Match the integration variable to the axis of rotation.

Section A • Concept Check • BEGINNER $4 \times 1 = 4$ _____

- 1 Disk method: $V = ?$
☐ A. $\pi \int [f(x)]^2 dx$ ☐ B. $\int f(x) dx$ ☐ C. $2\pi \int f(x) dx$ ☐ D. $\pi \int f(x) dx$
- 2 Rotating $f(x) = x$ on $[0, 4]$ gives volume:
☐ A. 16π ☐ B. $64\pi/3$ ☐ C. 8π ☐ D. 4π
- 3 Rotating $f(x) = 3$ on $[0, 2]$ gives volume:
☐ A. 9π ☐ B. 18π ☐ C. 6π ☐ D. 12π
- 4 Rotating $f(x) = x^2$ on $[0, 1]$ gives volume:
☐ A. $\pi/3$ ☐ B. $\pi/5$ ☐ C. π ☐ D. $2\pi/5$

Section B • Problem Solving • INTERMEDIATE $2 + 3 \times 3 = 11$ _____

- 5 Disk method: $V =$ _____
- 6 Rotating $f(x) = x$ on $[0, 4]$ gives $V =$ _____
- 7 Find the volume rotating $f(x) = x$ on $[0, 4]$ (disk method).

- 8 Find the volume rotating $f(x) = 3$ on $[0, 2]$ (disk method).

- 9 Find the volume rotating $f(x) = \sqrt{x}$ on $[0, 9]$ (disk method).

Section C • Challenge • CHALLENGE 5 _____

- 10 Find the volume rotating $f(x) = x^2$ on $[0, 1]$ (disk method).

Reflection — the most useful thing I learned: _____

A ___/4 B ___/11 C ___/5 **Total ___/20**

Teacher's Signature _____

Parent's Signature _____

ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-A 2-B 3-B 4-B | $5 \pi \int [f(x)]^2 dx$ 6 $64\pi/3$ 7 = $64\pi/3$ 8 = 18π 9 = $81\pi/2$ | 10 = $\pi/5$