

Worksheet

Volumes of solids—Disk and washer method

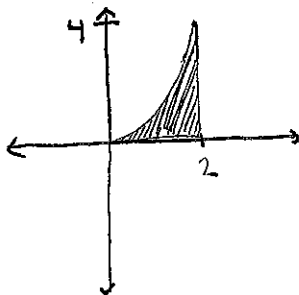
AP Calculus

using calculator

Name _____

Find the volume of the solid formed by the equations:

- 1.) $y = x^2, y = 0, x = 2$, is rotated about:
 a.) the x-axis
 b.) the y-axis
 c.) the line $y = 4$
 d.) the line $x = 2$



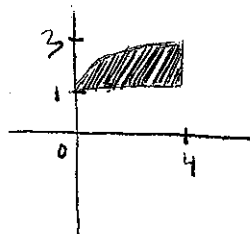
a. $\pi \int_0^2 (x^2)^2 dx$

b. $\pi \int_0^4 (2)^2 - (\sqrt{y})^2 dy$

c. $\pi \int_0^2 (4)^2 - (4 - x^2)^2 dx$

d. $\pi \int_0^4 (2 - \sqrt{y})^2 dy$

- 2.) $y = 1 + \sqrt{x}, y = 1, x = 4$ is rotated about:
 a.) the x-axis
 b.) the y-axis
 c.) the line $y = 3$
 d.) the line $x = 6$



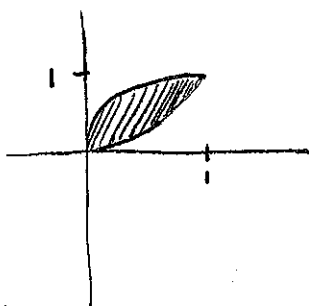
a. $\pi \int_0^4 (1 + \sqrt{x})^2 - (1)^2 dx$

b. $\pi \int_1^3 (4)^2 - ((y-1)^2)^2 dy$

c. $\pi \int_0^4 (3-1)^2 - (3 - (1 + \sqrt{x}))^2 dx$

d. $\pi \int_1^3 (6 - (y-1)^2)^2 - (6-4)^2 dy$

- 3.) $y = x^2$ and $y = \sqrt[3]{x}$ is rotated about:
 a.) the x-axis
 b.) the y-axis
 c.) the line $y = 1$



a. $\pi \int_0^1 (\sqrt[3]{x})^2 - (x^2)^2 dx$

b. $\pi \int_0^1 (\sqrt[3]{y})^2 - (y^3)^2 dy$

c. $\pi \int_0^1 (1 - x^2)^2 - (1 - \sqrt[3]{x})^2 dx$