

key

Quiz 5 solutions

1.



a)

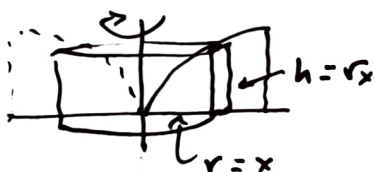


Disks:

$$r = \sqrt{x}$$

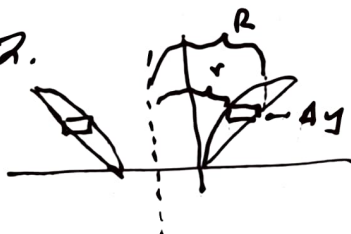
$$V = \int_0^4 \pi (\sqrt{x})^2 dx$$

b)



$$V = 2\pi \int_0^4 x \cdot \sqrt{x} dx$$

2.



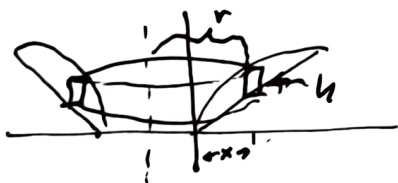
a)

$$R = \text{Line} - (-1) = 2y + 1$$

$$r = \text{Parabola} - (-1) = y^2 + 1$$

$$V = \pi \int_0^2 (2y+1)^2 - (y^2+1)^2 dy$$

b)



$$r = 1 + x$$

$$h = \text{Parabola} - \text{Line} = \sqrt{x} - \frac{x}{2}$$

$$V = 2\pi \int_0^4 (1+x)(\sqrt{x} - \frac{x}{2}) dx$$

c)



Washers:

$$r = 2 - \sqrt{x}$$

$$R = 2 - \frac{x}{2}$$

$$\pi \int_0^4 (2 - \frac{x}{2})^2 - (2 - \sqrt{x})^2 dx$$



You could do shells $r = 2 - y$
 $h = 2y - y^2$