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Example: 07 :

Given region: R : $y=\sqrt{x}$ and $y=x$.

For the interval, set $\sqrt{x}=x$.

$y=\sqrt{x}$ $\Rightarrow x=x^2$

$\therefore x=y^2$ $\Rightarrow x^2-x=0$.

$\therefore x=y$. $\Rightarrow x(x-1)=0$.

Now, Or, $x-1=0$

$\therefore x=0$ $\therefore x=1$.

$\therefore$ Interval $I=[0,1]$

$\therefore$ The volume of the solid:

$$\pi\int_0^1[(y)^2-(y)^2]\,dy.$$

$$= \pi \int_0^1 (y^4 - y^2)\, dy$$

$$= \pi \int_0^1 y^4\, dy - \pi \int_0^1 y^2\, dy.$$

$$= \pi \left[\frac{y^5}{5} - \frac{y^3}{3} \right]_0^1$$

$$= \pi \left[\left[\frac{(1)^5}{5} - \frac{(1)^3}{3} \right] - \left[\frac{(0)^5}{5} - \frac{(0)^3}{3} \right] \right]$$

$$= \pi \left[\frac{1}{5} - \frac{1}{3} - 0 + 0 \right]$$

$$= \pi \left[\frac{3 - 5}{15} \right]$$

$$= \pi \left[\frac{-2}{15} \right]$$

$$= -\frac{2\pi}{15}$$

(Ans).