

8.2 Q⁴ 1.

Solution.

$$\text{Volume of strip} = \pi r^2 \Delta x, \quad y = r = x^2$$

$$\text{total volume} = \sum \pi x^4 \Delta x \quad \text{as } \Delta x \rightarrow 0$$

$$\int_0^1 \pi x^4 dx$$

$$= \pi \int_0^1 x^4 dx$$

$$= \pi \left(\frac{x^5}{5} \right) \Big|_0^1$$

$$= \pi/5$$

Comments

Some of you found it difficult setting up the integrand:

$$\pi x^4$$

A few of you also could not the function πx^4 .

8.2 Q# 28

Solution,

If we take perpendicular slices to the x-axis of the volume generated by rotating $y = e^x$

we will have circles with radius $r = e^x$; $y = r = e^x$

Volume of a slice: $\pi r^2 \Delta x$

total volume: $\sum \pi r^2 \Delta x$

as $\Delta x \rightarrow 0$ we have

$$\int_0^1 \pi (e^x)^2 dx$$

$$= \pi \int_0^1 e^{2x} dx$$

$$= \pi \left. \frac{e^{2x}}{2} \right|_0^1$$

$$= \frac{\pi (e^2 - 1)}{2} \approx 10.036$$

Comments,

Quest a number of you still cannot set up the expression for the integrand.

And a few struggle with integrating πe^{2x} .