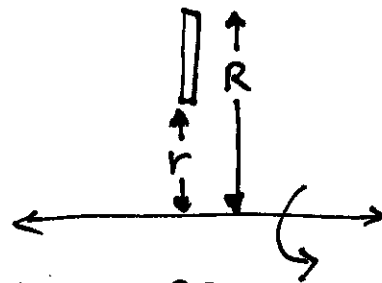
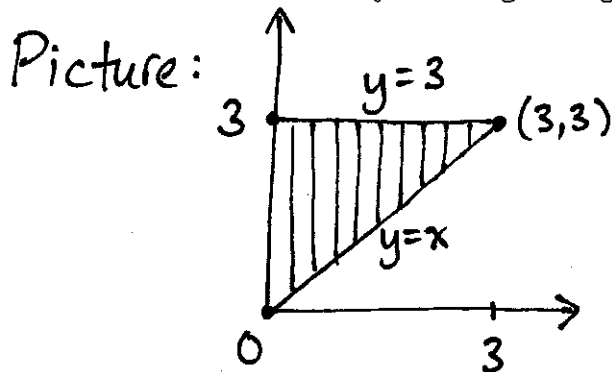


WRITE YOUR NAME:

MAC 2312 Quiz 5
Tuesday January 30th

Let A be the region bounded by $y = 3$ and $y = x$ between $x = 0$ and $x = 3$.
Find the volume obtained by revolving the region A around the x -axis.



$$\begin{aligned} \text{Volume} &= \int_{x=0}^{x=3} (\pi R^2 - \pi r^2) dx = \pi \int_0^3 (R^2 - r^2) dx \\ &= \pi \int_0^3 (3^2 - x^2) dx = \pi \int_0^3 (9 - x^2) dx \\ &= \pi \left[9x - \frac{x^3}{3} \right]_0^3 = \pi \left(9 \cdot 3 - \frac{3^3}{3} \right) \\ &= \pi (27 - 9) = 18\pi \end{aligned}$$