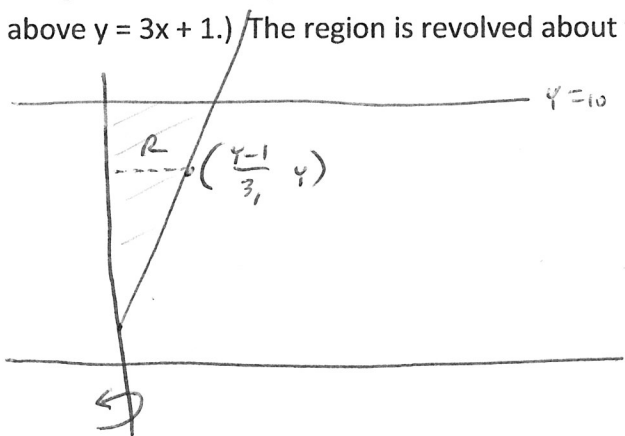


Calculus Study Guide: 6.3

A region is the triangle bounded by the graphs of $y = 3x + 1$, $y = 10$ and the y -axis. (Notice that the triangle lies above $y = 3x + 1$.) The region is revolved about the y -axis. What is the volume of the resulting solid?



$$y = 3x + 1$$

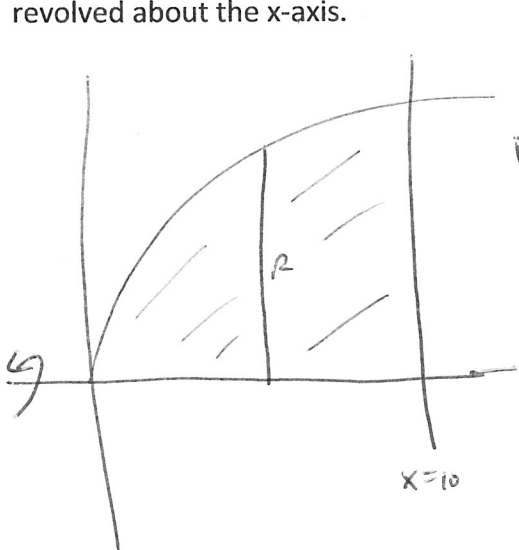
$$y - 1 = 3x$$

$$x = \frac{y-1}{3}$$

$$\pi \int_1^{10} \left(\frac{y-1}{3}\right)^2 dy$$

- A) 3303π B) 0.333π C) 111π D) 333π E) 27π

Find the volume of the solid that results when the region enclosed by $y = \sqrt{x}$, $x = 10$, the x -axis and the y -axis is revolved about the x -axis.



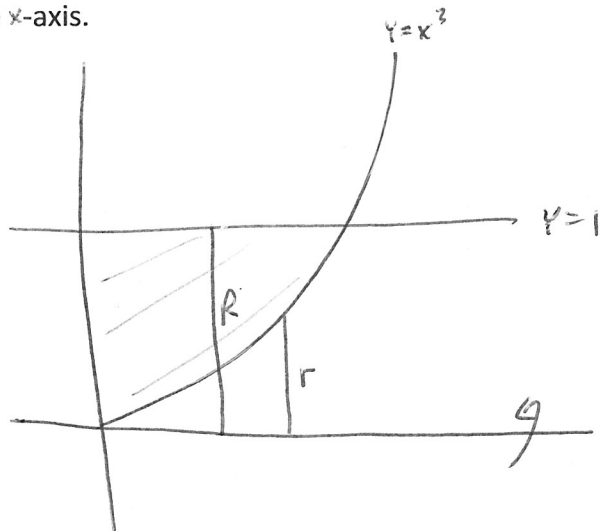
$$R = \sqrt{x}$$

$$\pi \int_0^{10} x dx$$

$$= \pi \cdot \frac{x^2}{2} \Big|_0^{10}$$

$$= \frac{\pi}{2} \cdot (100) = 50\pi$$

Find the volume of the solid that results when the region enclosed by $y = x^3$, $x = 0$ and $y = 1$ is revolved about the x -axis.



$$R = 1 \quad r = x^3$$

$$\pi \int_0^1 (1 - x^6) dx = \pi \left[x - \frac{x^7}{7} \right]_0^1$$

$$= \pi \left(1 - \frac{1}{7} \right) = \pi \cdot \frac{6}{7}$$