Find the volume of the solid generated by rotating the region bounded by $y = 0$, $x = 4$ and $y = \sqrt{x}$ around the line $x = 6$.

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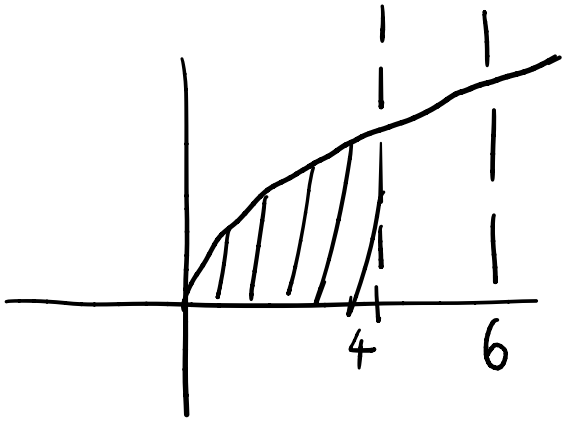

Length of rectangular cylinder

$= 2\pi(6-x)$

Height

$= \sqrt{x}$

$$V = \int_0^4 2\pi(6-x)\sqrt{x}\,dx$$

$$= 2\pi \int_0^4 6\sqrt{x} - x^{\frac{3}{2}}\,dx$$

$$= 2\pi \left(\frac{6x^{\frac{3}{2}}}{3/2} - \frac{x^{\frac{5}{2}}}{5/2} \right)\Bigg|_0^4$$

$$= 2\pi \left(4(8) - \frac{2(32)}{5} \right)$$

$$= 2\pi \left(\frac{5(32)}{5} - \frac{2(32)}{5} \right)$$

$$= \frac{192}{5}\pi$$