

The JETS Challenge

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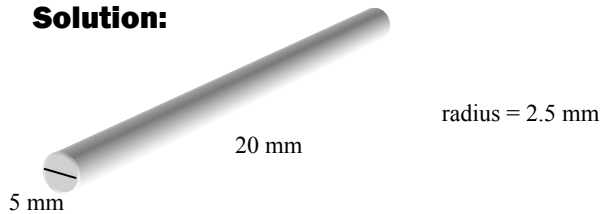
Challenge 83 – The Ink Challenge

Problem:

A cylindrical ink pen cartridge measures 5 mm diameter by 20 mm long. During a performance test, that volume of ink will draw a single continuous 0.4 mm wide line that measures 400 meters long.

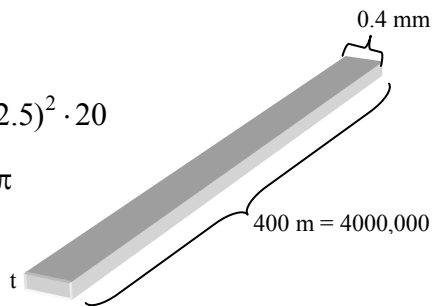
How thick is the layer of ink in millimeters?

Solution:



$$V = \pi \cdot (2.5)^2 \cdot 20$$

$$V = 125\pi$$



$$125\pi = t \cdot 400,000 \cdot 4$$

$$\frac{125\pi}{1,600,000} = t$$

$$2.45 \times 10^{-3} \text{ mm} = t$$