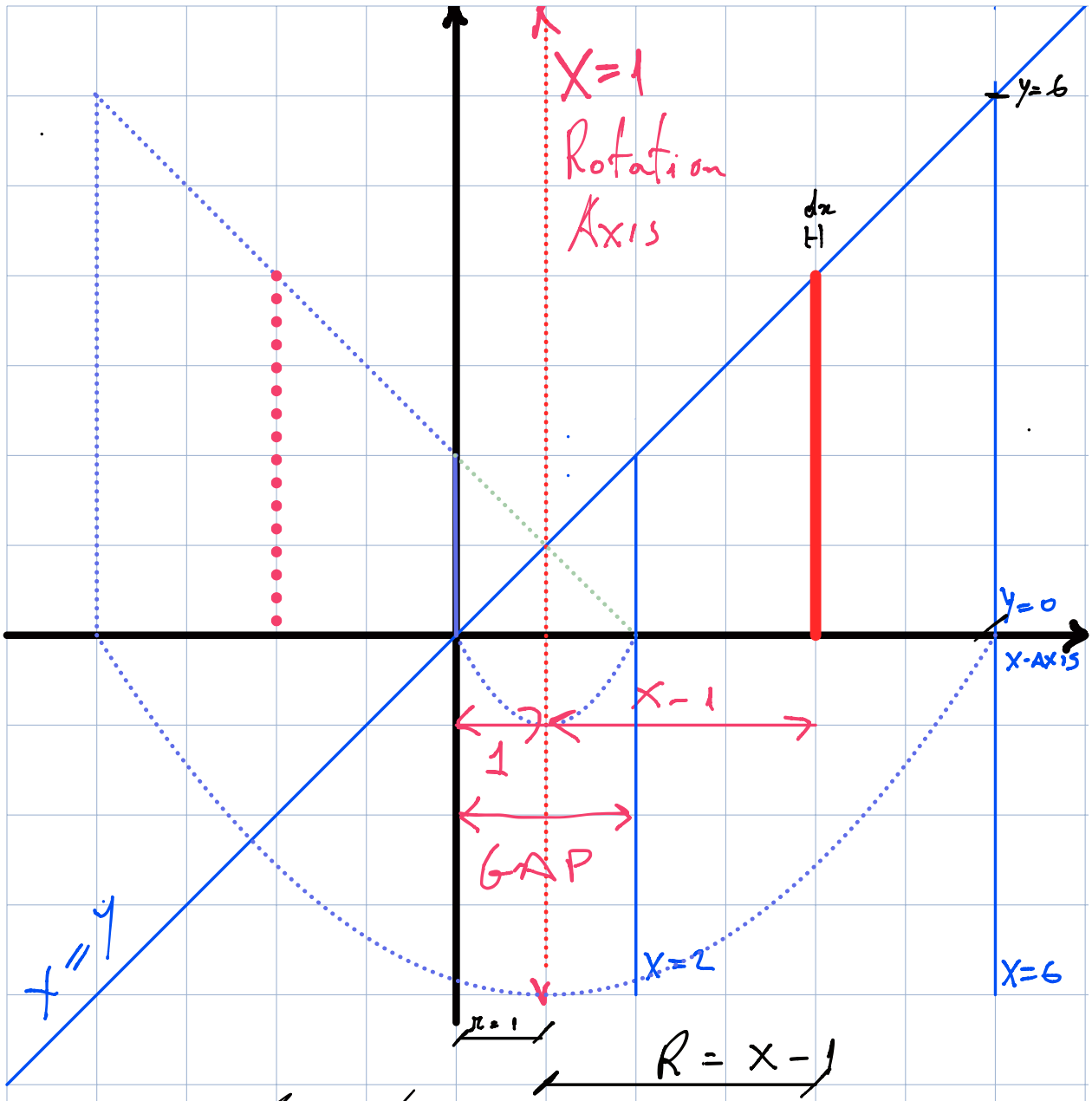

Cylindrical Shells

LENGTH: $2\pi \cdot R = 2\pi \cdot (x-1)$

HEIGTH: $f(x) = x$

Thickness: dx

$$V = \int_2^6 2\pi (x-1) \cdot x \cdot dx$$

$$V = 2\pi \int_2^6 \left(x^2 - x\right) \cdot dx$$

$$V = 2\pi \left[\frac{x^3}{3} - \frac{x^2}{2} \right]_2^6$$

$$V = 2\pi \left[\frac{1}{3}\left(6^3 - 2^3\right) - \frac{1}{2}\left(6^2 - 2^2\right) \right.$$

$$V = 2\pi \left[\frac{1}{3}(216-8) - \frac{1}{2}(36-4) \right]$$

$$V = 2\pi \left(\frac{1}{3} \cdot 208 - 16 \right)$$

$$V = \frac{2\pi}{3}(20^2 - 16.3)$$

$$V = \frac{2\pi}{3}(20^2 - 4^2)$$

$$V = \frac{2\pi}{3} \cdot 160$$

$$V = \frac{320\pi}{3} \text{ <UNITS>}^3$$