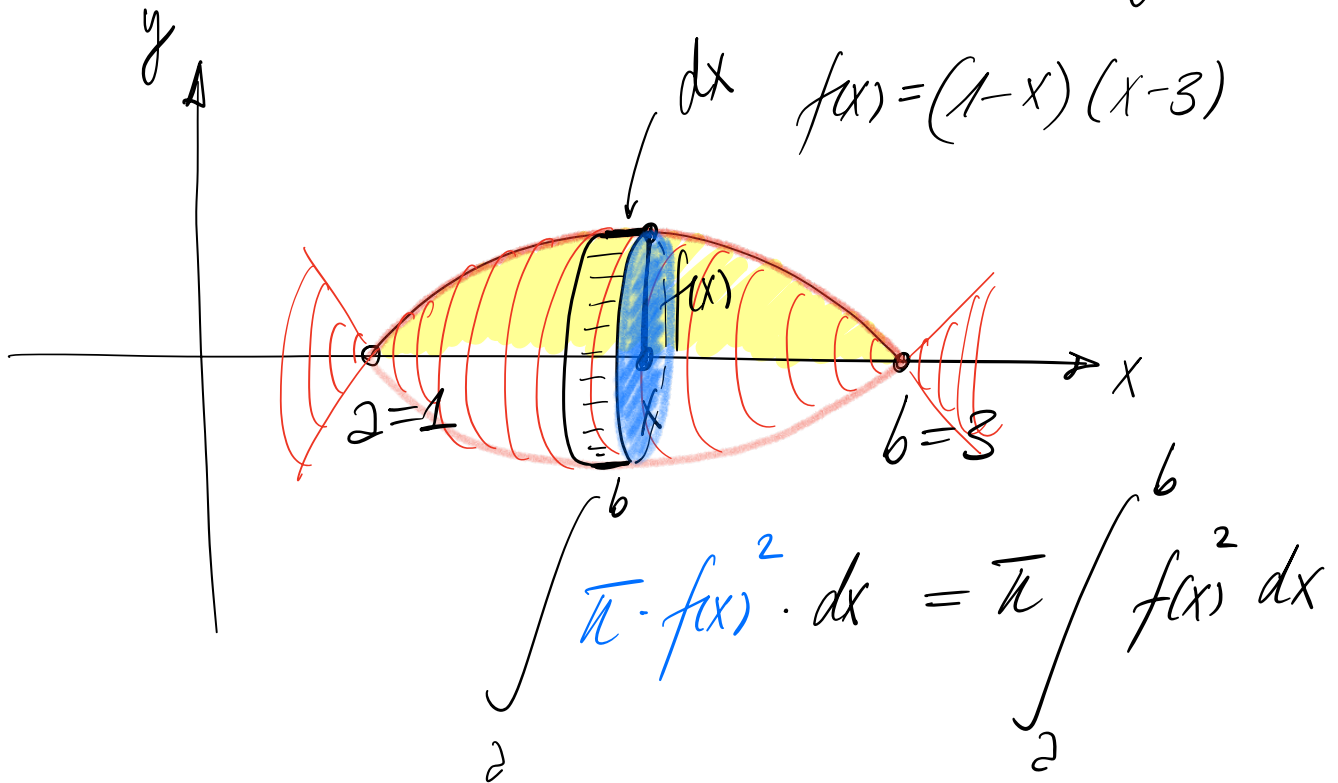


Calculer un volume avec une intégrale



$$f(x) = (1-x)(x-3) = x-3 -x^2+3x = -x^2+4x-3$$

$$\pi \int_1^3 (-x^2+4x-3)^2 dx = \pi \int_1^3 (-x^2+4x-3)(-x^2+4x-3) dx$$

$$= \pi \int_1^3 (\cancel{x^4} - \cancel{4x^3} + 3x^2 - \cancel{4x^3} + \cancel{16x^2} - 12x + \cancel{3x^2} - 12x + 9) dx$$

$$= \pi \int_1^3 (x^4 - 8x^3 + 22x^2 - 24x + 9) dx$$

$$= \pi \left(\frac{1}{5} x^5 - 2x^4 + \frac{22}{3} x^3 - 12x^2 + 9x \right) \Big|_1^3$$

$$= \pi \left(\frac{18}{5} - \frac{38}{15} \right) = \pi \frac{54 - 38}{15} = \pi \cdot \frac{16}{15}$$

$$\approx 3,35$$