

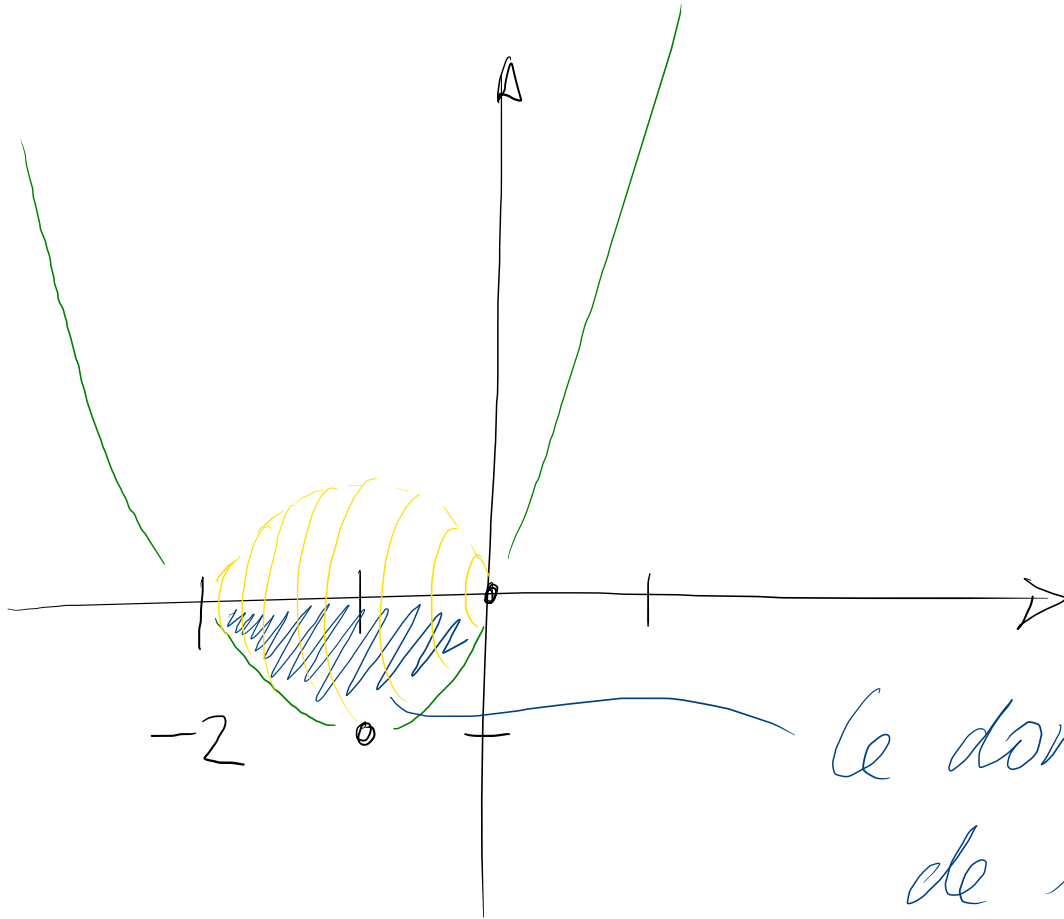
$$f(x) = x^2 + 2x$$

$$f(x) = 0 \Leftrightarrow x^2 + 2x = 0$$

$$\Leftrightarrow x(x+2) = 0$$

$$\Leftrightarrow x = 0 \text{ ou } x = -2$$

$$f(-1) = 1 - 2 = -1$$



Le domaine tourne autour de l'axe O_x

$$V = \left| \int_{-2}^0 \pi \cdot (f(x))^2 dx \right|$$

$$= \pi \left| \int_{-2}^0 f^2(x) dx \right|$$

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

$$\int (x^4 + 4x^3 + 4x^2) dx = \frac{1}{5}x^5 + x^4 + \frac{4}{3}x^3 + C$$

$$\int_{-2}^0 f^2(x) dx = \left. \frac{1}{5}x^5 + x^4 + \frac{4}{3}x^3 \right|_{-2}^0$$

$$= 0 - \left(-\frac{32}{5} + 16 - \frac{4}{3}8 \right) = -\left(-\frac{32}{5} + 16 - \frac{32}{3} \right)$$

$$= \frac{32}{5} - 16 + \frac{32}{3}$$

$$= \frac{96 - 240 + 160}{15} = \frac{256 - 240}{15}$$

$$= \frac{16}{15}$$

$$\Rightarrow A = \pi \left| \frac{16}{15} \right| = \frac{16\pi}{15}$$