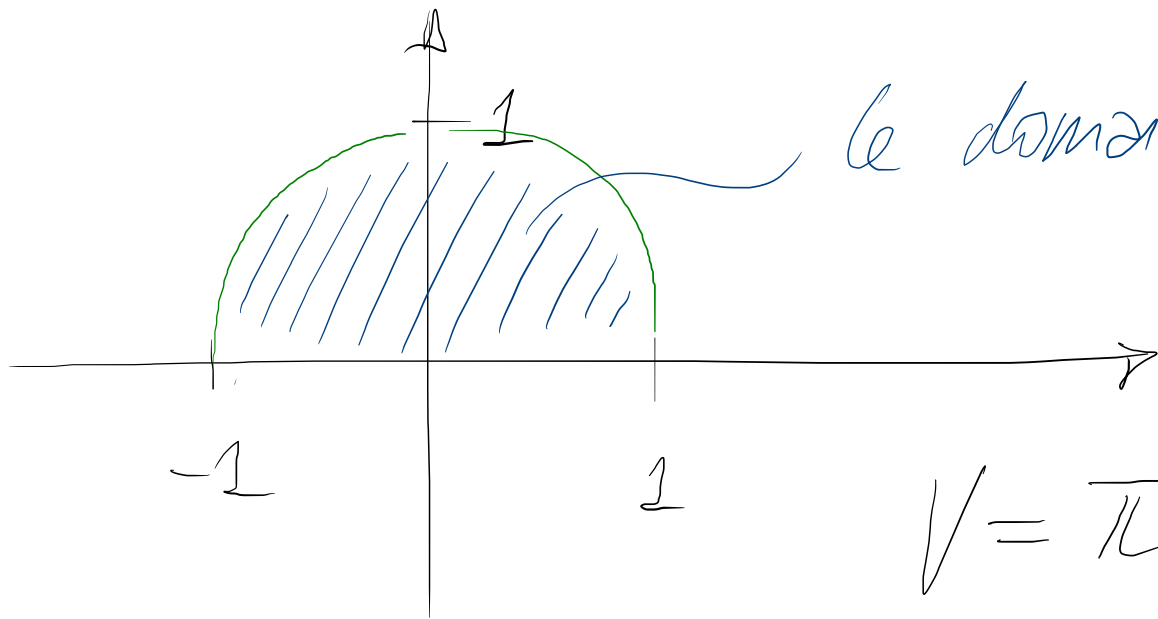


$$f(x) = \sqrt{1-x^2} \quad D_f = [-1; 1] \quad f(0) = 1$$

$$f(x) = 0 \Leftrightarrow 1 = x^2 \Leftrightarrow x = \pm 1$$



le domaine tourne autour de Ox

$$V = \pi \left| \int_{-1}^1 f^2(x) dx \right|$$

$$f^2(x) = \left(\sqrt{1-x^2}\right)^2 = 1-x^2$$

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

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

$$\Rightarrow V = \pi \cdot \left| \frac{4}{3} \right| = \frac{4}{3} \pi$$

C'est le volume de la sphère unité!

$$\frac{4}{3} \pi \cdot 1^3$$