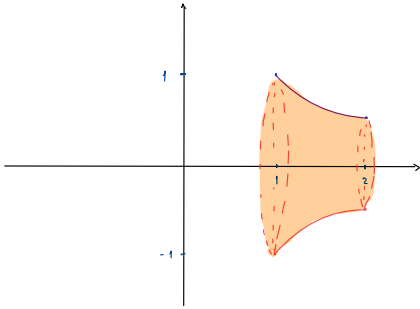# 01 - Solidos de Revolución. & 02 - Método Disco.

1. Hallar V del Solido generado por $y = \frac{1}{x}$, $[1,2]$ que gira alrededor del eje x.

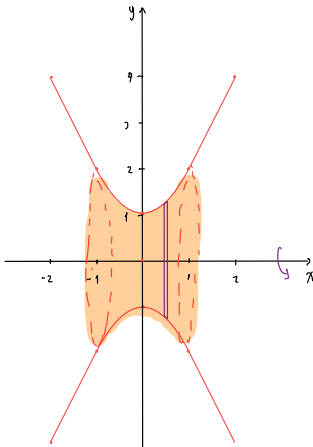$$dv = \pi \left(\frac{1}{x}\right)^2 h \quad , \quad h \to 0 = dx$$

$$dv = \pi \left(\frac{1}{x}\right)^2 dx \quad \Big/ \int (\ )$$

$$\int dv = \int_1^2 \pi \left(\frac{1}{x}\right)^2 dx$$

$$V = -\frac{\pi}{x} \Big|_1^2 = -\pi \left[\frac{1}{2} - 1\right]$$

$$V = \frac{\pi}{2} \text{ und}^3$$

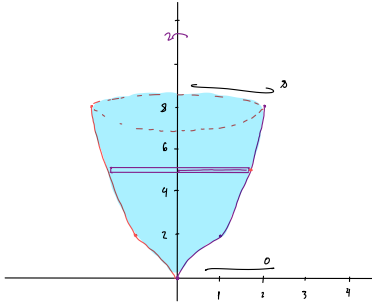2. Hallar V del Solido generado por $y = x^2 + 1$, $[-1, 1]$ que gira alrededor del eje x.

$$\int dv = \int_{-1}^1 \pi (x^2 + 1)^2 dx$$

$$V = \pi \int_{-1}^1 (x^4 + 2x^2 + 1) dx$$

$$= \pi \left[\frac{x^5}{5} + \frac{2}{3}x^3 + x\right] \Big|_{-1}^1 = \frac{56}{15}\pi \text{ und}^3$$

3. Hallar V del Solido generado por $y = x^3$, $[0,2]$
que gira alrededor del eje y.

$y = x^3 \longrightarrow x = \sqrt[3]{y}$

x	y
0	0
2	8

$\Rightarrow y = 0^3 = 0$

$\Rightarrow y = 2^3 = 8$

$\int dv = \int_0^8 \pi \left(\sqrt[3]{y}\right)^2 dy$

$V = \pi \int_0^8 y^{2/3} dy$

$= \pi \left[\dfrac{3}{5} y^{5/3} \right]\Big|_0^8 = \pi \dfrac{3}{5} (8)^{5/3} = \dfrac{96}{5} \pi \; und^3$