

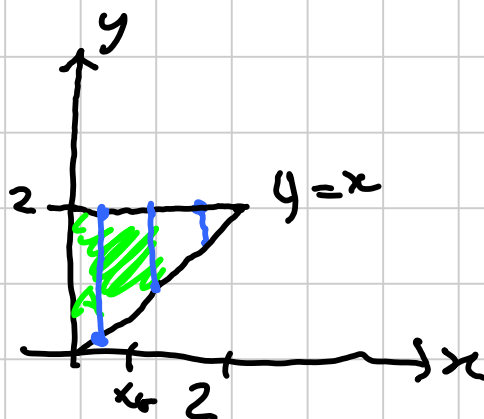
# SOLIDI DI ROTAZIONE 1

Titolo nota

05/06/2014

3) Asse  $x$

$$0 \leq y \leq 2, 0 \leq x \leq y$$



$$VOLUME = 2\pi \text{Area } y_G$$

$$\text{Area} = 2 \cdot 2 / 2 = 2$$

$$y_G = \frac{1}{\text{Area}} \int_0^2 y dy \int_0^y dx = \frac{1}{2} \int_0^2 y dy = \frac{1}{2} \left[ \frac{y^2}{2} \right]_0^2 = \frac{1}{2} \left[ \frac{4}{2} - 0 \right] = 1$$

$$VOLUME = 2\pi \text{Area } y_G = 4\pi \cdot 1 = 4\pi \quad \text{OK}$$

Baricentro è rispetto a  $x$ , perché rispetto a  $y$  è 0 per simmetria.

$$x_G = \frac{1}{V} \int_0^2 x dx \pi x^2 = \frac{\pi}{V} \int_0^2 x^3 dx = \frac{\pi}{V} \left[ \frac{x^4}{4} \right]_0^2 = \frac{\pi}{4V} \cdot 16 = \frac{4\pi}{V}$$

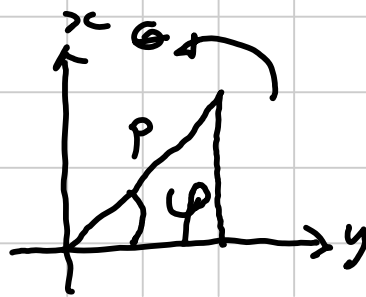
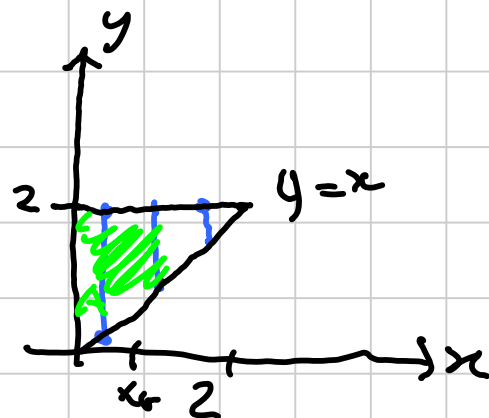
$$= \frac{4\pi}{4\pi} = 1 \quad \text{OK}$$

Superficie:

$$S_{LAT} = 2\pi \cdot 2 \cdot 2 = 8\pi$$

$$S_{base} = \pi 2^2 = 4\pi$$

$$\int_0^{\sqrt{8}} p^2 dp \int_0^{2\pi} d\theta \cos \pi/4 =$$



$$= \frac{\sqrt{2}}{2} \cdot 2\pi \cdot \frac{p^3}{3} \Big|_0^{\sqrt{8}} = \frac{\sqrt{2}\pi}{3} (2\sqrt{2})^3 = \frac{\sqrt{2}\pi}{3} 8 \cdot 2\sqrt{2} = \frac{32}{3}\pi$$

Recapitololo!

$$S_{\text{tot}} = S_L + S_{\text{g}} + S_{\text{f}} = \frac{32}{3}\pi + 8\pi + 4\pi = \frac{32\pi + 24\pi + 12\pi}{3}$$

$$= \frac{68}{3}\pi$$

$$\neq \pi 4(2 + \sqrt{2})$$