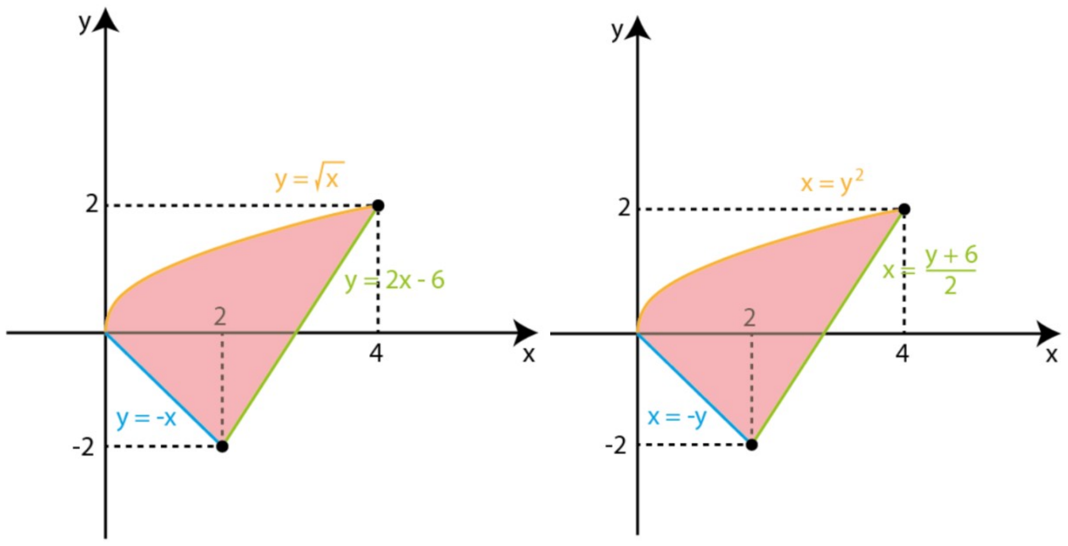
Gabarito prova T02 (prof. Montauban):

Q1:

a) (Bastaria fazer um único esboço, eu fiz dois para explicar melhor o caso horizontal (b) e o caso vertical (c))



b) Em torno de $y = -3$:

$$V = \pi \int_0^2 \left(\sqrt{x} - (-3)\right)^2 dx - \pi \int_0^2 (-x - (-3))^2 dx$$
$$+ \pi \int_2^4 \left(\sqrt{x} - (-3)\right)^2 dx - \pi \int_2^4 (2x - 6 - (-3))^2 dx$$

c) Em torno de $x = 0$ (eixo y) :

$$V = \pi \int_{-2}^0 \left(\frac{y+6}{2}\right)^2 dy - \pi \int_{-2}^0 (-y)^2 dy + \pi \int_0^2 \left(\frac{y+6}{2}\right)^2 dy - \pi \int_0^2 (y^2)^2 dy$$

2) $\int_0^2 3^{-x^2}.2xdx \rightarrow u = -x^2\ e\ du = -2xdx\ \rightarrow u = x^2\ e\ assim - du = 2xdx \rightarrow$

$$\int_0^2 -3^u du = \left(-\frac{3^u}{ln3}\right)_0^2 = \left(-\frac{3^{-x^2}}{ln3}\right)_0^2 = \left(-\frac{3^{-4}}{ln3}\right) - \left(-\frac{3^0}{ln3}\right) = -\frac{3^{-4}}{ln3} + \frac{1}{ln3}$$

(converge)