

$$b) \quad f(x) = \frac{4}{x^2} - 1$$

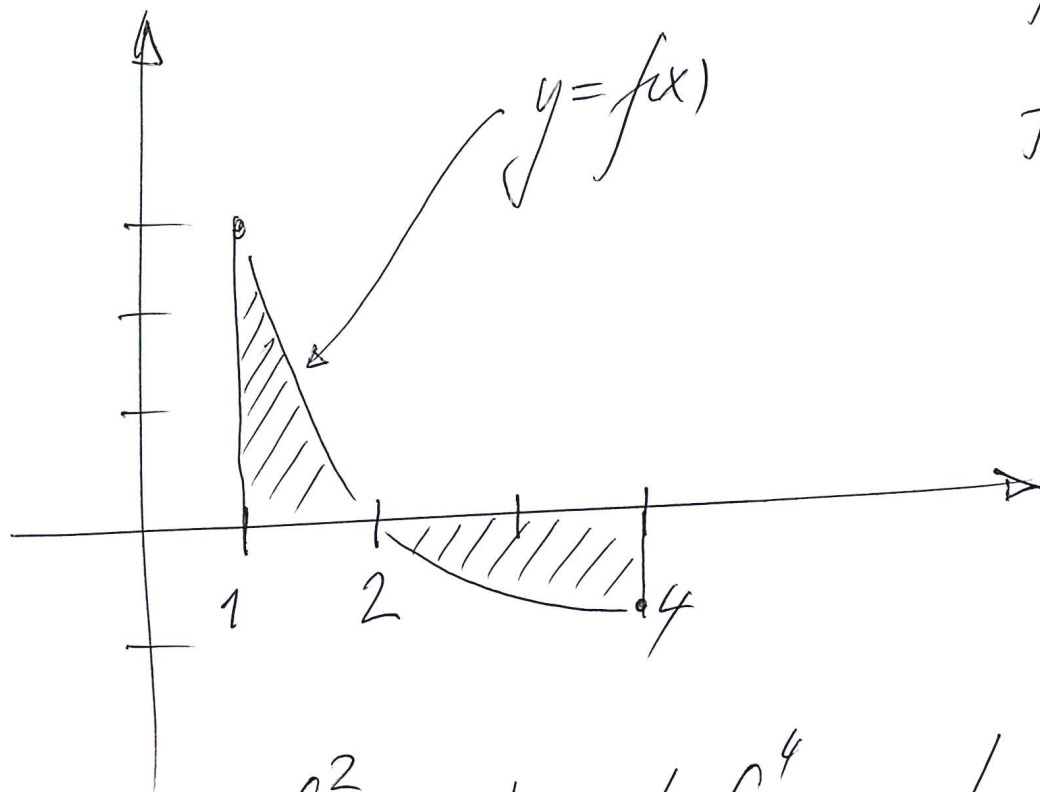
$$f(x) = 0 \Leftrightarrow \frac{4}{x^2} - 1 = 0 \Leftrightarrow \frac{4}{x^2} = 1$$

$$4 = x^2 \Leftrightarrow x = \pm 2$$

$$\Rightarrow f(x) = 0 \Leftrightarrow x = \pm 2$$

$$f(1) = 3$$

$$f(4) = -\frac{3}{4}$$



$$A = \left| \int_1^2 f(x) dx \right| + \left| \int_2^4 f(x) dx \right|$$

$\swarrow$  Voir page suivante pour les calculs.  
 $= \dots = 1 + 1 = 2$

Calculons  $\int f(x) dx$ :

$$\int \left( \frac{4}{x^2} - 1 \right) dx = \int \frac{4}{x^2} dx - \int 1 dx$$

$$= 4 \int x^{-2} dx - x = 4 \cdot \frac{1}{-2+1} x^{-2+1} - x + C$$

$$= \frac{4}{-1} x^{-1} - x + C = -4 \cdot \frac{1}{x} - x + C$$

$$\left| \int_1^2 f(x) dx \right| = \left| \left( -\frac{4}{x} - x \right) \Big|_1^2 \right| = \left| \left( -\frac{4}{2} - 2 \right) - \left( -\frac{4}{1} - 1 \right) \right|$$

$$= \left| -4 + 5 \right| = \left| 1 \right| = 1$$

$$\left| \int_2^4 f(x) dx \right| = \left| \left( -\frac{4}{x} - x \right) \Big|_2^4 \right| = \left| \left( -\frac{4}{4} - 4 \right) - \left( -\frac{4}{2} - 2 \right) \right|$$

$$= \left| -5 + 4 \right| = \left| -1 \right| = 1$$