EJERCICIO 42BE2234:

"achimagec.com"

Área determinada por:

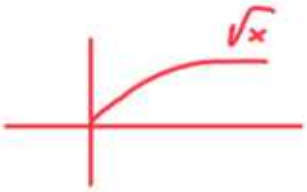
$f(x) = 2\sqrt{x}$

$g(x) = x$

(Representar el recinto)

$f(x) = 2\sqrt{x}$

- función irracional
- Definida de $[0, \infty)$
- Por encima de eje x



x	0	1	4	9
y	0	2	4	6

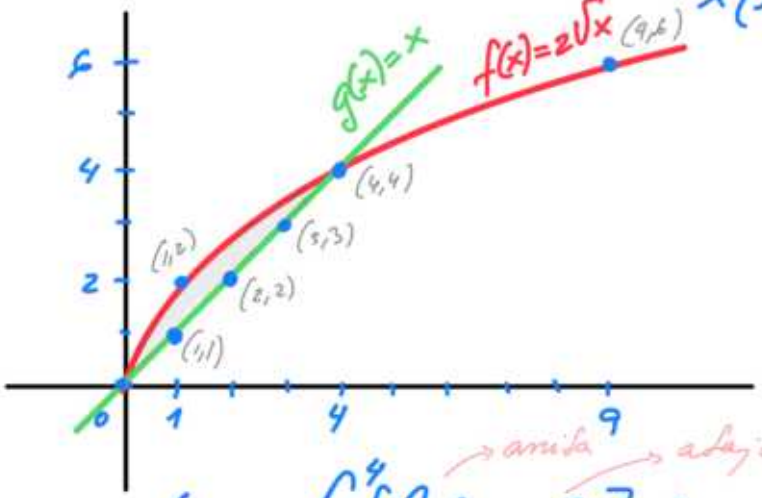
$f(x) = x$

- función lineal
- bisectriz del primer cuadrante

Corte entre $f(x)$ y $g(x)$:

$(2\sqrt{x})^2 = (x)^2 \Rightarrow 4x = x^2 \Rightarrow x^2 - 4x = 0$

$x(x-4) = 0 \rightarrow x = 0$, $x = 4$



$$\text{Área} = \int_0^4 [f(x) - g(x)]\,dx = \int_0^4 (2\sqrt{x} - x)\,dx = \dots$$

(arriba → abajo)

$$\int (2\sqrt{x} - x)\,dx = \int 2 \cdot x^{1/2}\,dx - \int x\,dx =$$

$$= 2 \cdot \frac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1} - \frac{x^2}{2} = 2\,\frac{x^{3/2}}{3/2} - \frac{x^2}{2} =$$

$$= \frac{4}{3}\sqrt{x^3} - \frac{x^2}{2} + C$$

$$\ldots = \left[\frac{4}{3}\sqrt{x^3} - \frac{x^2}{2}\right]_0^4 = \frac{4}{3}\sqrt{4^3} - \frac{4^2}{2} = \frac{48}{3} - 8$$

$$\text{Área} = \frac{32}{3} - 8 = \frac{32-24}{3} = \frac{8}{3}\,u^2$$