EJERCICIO 41BE2489:

$f(x) = x^2 + 4x + 5$

$f(x) = x^2 + 4x + 5$ (parábola)

$g(x) = 5$ (recta)

Corte con los ejes:

Eje OX; $y = 0 \Rightarrow 0 = x^2 + 4x + 5$

$x = \frac{-4 \pm \sqrt{4^2 - 4 \cdot 5}}{2 \cdot 1} \Rightarrow$ No corta OX.

Eje OY; $x = 0$; $y = 5$ $\boxed{(0,5)}$

Vértice: $f'(x) = 2x + 4 \Rightarrow f'(x) = 0$

$2x + 4 = 0 \Rightarrow x = -2$

$f(-2) = (-2)^2 + 4(-2) + 5 = 1 \Rightarrow \boxed{V(-2,1)}$

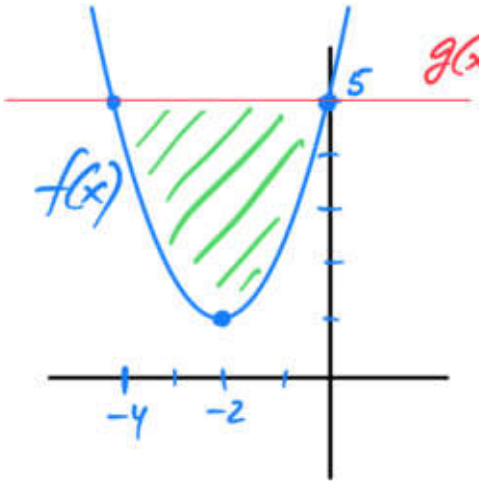
Corte entre $f(x)$ y $g(x)$ $\Rightarrow f(x) = g(x)$

$x^2 + 4x + 5 = 5 \Rightarrow x^2 + 4x = 0$

$x(x+4) = 0 \nearrow x = 0$

$\searrow x = -4$

} Serán los límite de integración



$$\text{Área} = \int_{-4}^{0} [g(x) - f(x)]\,dx =$$

$$= \int_{-4}^{0} [5 - (x^2 + 4x + 5)]\,dx =$$

$$= \int_{-4}^{0} (-x^2 - 4x)\,dx =$$

$$= \left[-\frac{x^3}{3} - \frac{4x^2}{2} \right]_{-4}^{0} = 0 - \left[-\frac{(-4)^3}{3} - 2(-4)^2 \right] =$$

$$= -\left[\frac{64}{3} - 32 \right] = -\frac{64 - 96}{3} = \boxed{\frac{32}{3}\,u^2}$$