

Integrales definidas y áreas entre curvas

Indefinida $\int f(x) dx \rightarrow F(x) + C$

Integrales
Definida $\int_a^b f(x) dx \rightarrow F(b) - F(a) \rightarrow \text{numero}$

F es una función

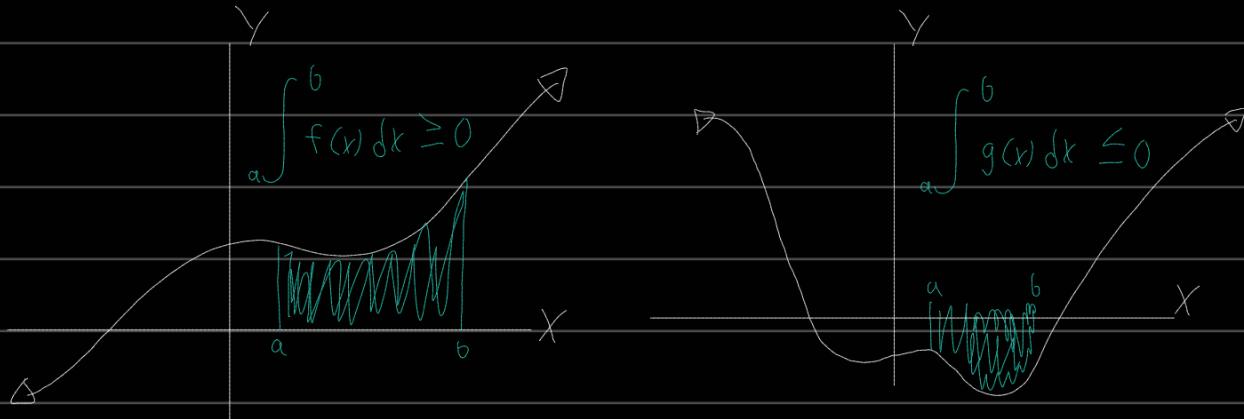
Teorema fundamental del cálculo

Si $f(x)$ es continua en un intervalo cerrado $[a, b]$

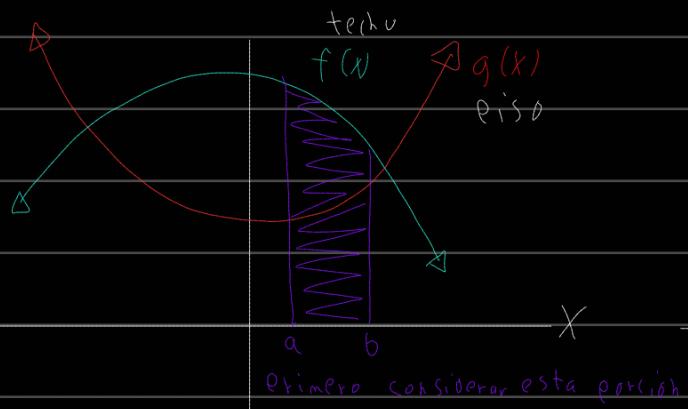
y $F(x)$ es una primitiva de f en $[a, b]$, se cumple:

$$\int_a^b f(x) dx = F(b) - F(a)$$

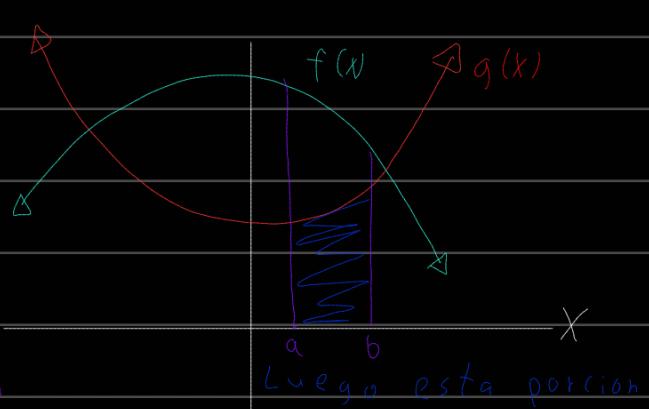
¿Qué significa gráficamente una integral definida?



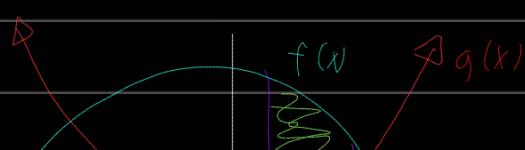
Área de una región entre curvas



$$\int_a^b f(x) dx$$



$$\int_a^b g(x) dx$$



$$(x+2)(x-1) = 0$$

$x=0$	$x=2$
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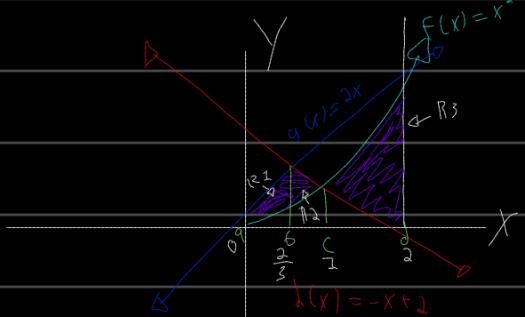
a b

$$x = \frac{2}{3}$$

$$x = -2$$

$x=-1$

c
no sense



$$\int_a^b [f(x) + g(x)] dx + \int_b^c [g(x) - h(x)] dx + \int_c^d [f(x) - h(x)] dx$$

$$\int_0^{\frac{2}{3}} [x^2 + 2x] dx + \int_{\frac{2}{3}}^1 [-x^2 - x + 2] dx + \int_1^2 [x^2 - (-x+2)] dx$$

Se puede acordar

$$\frac{28}{6} + \frac{25}{162} + \frac{71}{6} \quad (\text{no obligatorio})$$

$$= \frac{7}{3} \text{ u}^2$$