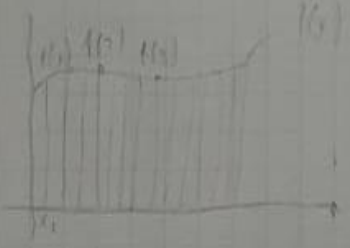


## Clase 7

9/11/2020

- ejercicios Repaso general
- tarea

{ Plan



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

$a$  y  $b \rightarrow$  intervalo

$f(x) \rightarrow$  función

$dx \rightarrow$  diferencial

límite superior

$$\int_{-3}^2 2x+6 \, dx$$

límite inferior

$$\int_{-3}^2 2x \, dx + \int_{-3}^2 6 \, dx$$

$$f(x) = x^n \Rightarrow \int f(x) \, dx = x^n = \frac{x^{n+1}}{n+1}$$

$$\frac{2x^2}{2} \Big|_{-3}^2 + 6x \Big|_{-3}^2 \quad \therefore x^2 \Big|_{-3}^2 + 6x \Big|_{-3}^2$$

$$2^2 - (-3)^2 + 6(2) - (-3)6$$

$$-5 + 30 = 25$$

$$f(x) = x^2, x \in \mathbb{R}$$

$$f'(x) = 2x$$

$$\int 2x \, dx$$

$$x^2 + C$$

siempre que se realice una integral indefinida se agrega una constante

$$\int_{-1}^2 (7-3x) \, dx$$

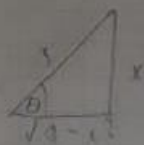
$$\int_{-1}^2 7 \, dx - \int_{-1}^2 3x \, dx$$

$$7x \Big|_{-1}^2 - \frac{3x^2}{2} \Big|_{-1}^2$$

$$7(2) - (7(-1)) - \left[ \frac{3(2)^2}{2} - \frac{3(-1)^2}{2} \right]$$

$$21 - \frac{1}{2} = 33/2$$

$$\int_0^3 \sqrt{4-x^2} dx$$



$$\textcircled{1} \quad \cos \theta = \frac{\sqrt{4-x^2}}{2}$$

$$2 \cos \theta = \sqrt{4-x^2}$$

$$\int_0^3 2 \cos \theta \cdot 2 \cos \theta d\theta$$

$$\sin \theta = \frac{x}{2} \quad \therefore \sin \theta = dx$$

$$\theta = \arcsin \left( \frac{x}{2} \right) \quad dx = 2 \cos \theta$$

$$4 \int_0^3 \cos^2 \theta d\theta$$

$$\frac{4}{2} \int_0^3 (1 + \cos(2\theta)) d\theta \quad \therefore \quad \frac{4}{2} \left( \theta \Big|_0^3 + \int_0^3 \cos(2\theta) d\theta \right)$$

$$\frac{4}{2} \left( \theta \Big|_0^3 + \frac{1}{2} (\sin(2\theta) - \sin(0)) \right) = \theta \Big|_0^3$$

17/11/2020

Plan

- Ejercicios de repaso

$$\textcircled{1} \int \frac{x}{\sqrt{x+1}}$$

$$u^2 = u^2 - 1$$

$$x = u^2 - 1$$

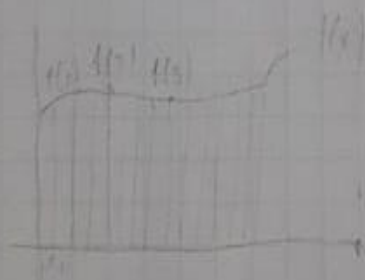
$$\int \frac{u^2 - 1}{u} \cdot 2u du \quad dx = 2u du$$

$$2 \int (u^2 - 1) du \quad \therefore \quad 2 \left( \frac{u^3}{3} - u \right) + C$$

$$2 \left( \frac{(x+1)^3}{3} - (x+1) \right) + C$$

9/11/2020

- ejercicios Repaso general
  - tarea
- { Plan



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

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$$\int_{-3}^2 2x+6 \, dx$$

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$$\int_{-3}^2 2x \, dx + \int_{-3}^2 6 \, dx$$

$$f(x) = x^n \Rightarrow \int f(x) \, dx = x^{n+1} = \frac{x^{n+1}}{n+1}$$

$$\frac{2x^2}{2} \Big|_{-3}^2 + 6x \Big|_{-3}^2 \quad \therefore x^2 \Big|_{-3}^2 + 6x \Big|_{-3}^2$$

$$2^2 - (-3)^2 + 6(2) - (-3)6$$

$$= 4 - 9 + 12 + 18 = 25$$

$$f(x) = x^2, x \in \mathbb{R}$$

$$f'(x) = 2x$$

$$\int 2x \, dx$$

$$x^2 + C$$

siempre que se realice una integral indefinida se agrega una constante

$$\int_{-1}^2 (7-3x) \, dx$$

$$\int_{-1}^2 7 \, dx - \int_{-1}^2 3x \, dx$$

$$7x \Big|_{-1}^2 - \frac{3x^2}{2} \Big|_{-1}^2$$

$$7(2) - (7(-1)) - \left[ \frac{3(2)^2}{2} - \frac{3(-1)^2}{2} \right]$$

$$14 - (-7) - \left[ \frac{12}{2} - \frac{3}{2} \right]$$

$$21 - \frac{9}{2} = \frac{33}{2}$$

$$\int_0^3 \sqrt{4-x^2} dx$$



$$\cos \theta = \frac{\sqrt{4-x^2}}{3}$$

$$3 \cos \theta = \sqrt{4-x^2}$$

$$\int_0^3 3 \cos \theta \cdot 3 \cos \theta d\theta$$

$$\sin \theta = \frac{x}{3} \Rightarrow \sin \theta = dx$$

$$\theta = \arcsin \frac{x}{3} \quad dx = 3 \cos \theta d\theta$$

$$9 \int_0^3 \cos^2 \theta d\theta$$

$$\frac{9}{2} \int_0^3 (1 + \cos(2\theta)) d\theta = \frac{9}{2} \left( \theta \Big|_0^3 + \int_0^3 \cos(2\theta) d\theta \right)$$

$$\frac{9}{2} \left( \theta \Big|_0^3 + \left( \frac{1}{2} (\sin(2\theta) - \sin(0)) \right) \Big|_0^3 \right) = \frac{9}{2} \left( \theta \Big|_0^3 \right)$$