

1.- Resuelve las siguientes integrales:

a) $\int \frac{\text{Sen}x - \text{Cos}x}{\text{Sen}x + \text{Cos}x} dx$

Solución:

$$\int \frac{\text{Sen}x - \text{Cos}x}{\text{Sen}x + \text{Cos}x} dx = - \int \frac{(\text{Sen}x + \text{Cos}x)'}{\text{Sen}x + \text{Cos}x} dx = -\ln|\text{Sen}x + \text{Cos}x| + k$$

b) $\int x \text{Ln}x \, dx$

Solución:

$$\int x \text{Ln}x \, dx \Rightarrow \begin{cases} u = \text{Ln}x \xrightarrow{\text{diferenciando}} du = \frac{1}{x} dx \\ dv = x dx \xrightarrow{\text{integrando}} v = \frac{x^2}{2} \end{cases} \Rightarrow \int x \text{Ln}x \, dx = \frac{x^2 \text{Ln}x}{2} - \int \frac{x}{2} dx =$$

$$= \frac{x^2 \text{Ln}x}{2} - \frac{x^2}{4} + k$$

c) $\int \frac{x-1}{x^2-5x+6} dx$

Solución:

$$\int \frac{x-1}{x^2-5x+6} dx = \int \frac{2}{x-3} dx - \int \frac{1}{x-2} dx = 2\text{Ln}|x-3| - \text{Ln}|x-2| + k =$$

$$= \text{Ln} \left(k \frac{(x-3)^2}{|x-2|} \right)$$

d) $\int \frac{dx}{(1+x)\sqrt{x}}$

Solución:

$$\int \frac{dx}{(1+x)\sqrt{x}} \xrightarrow{\text{Haciendo el cambio } x=t^2} \int \frac{2tdt}{(1+t^2)t} = \int \frac{2}{1+t^2} dt = 2\text{ar} \tan t + k =$$

$$= 2\text{ar} \tan \sqrt{x} + k$$

e) $\int \frac{5}{\sqrt{9-4x^2}} dx$

Solución:

$$\int \frac{5}{\sqrt{9-4x^2}} dx = \int \frac{5}{3\sqrt{1-\left(\frac{2x}{3}\right)^2}} dx = \frac{5}{2} \int \frac{\frac{2}{3}}{\sqrt{1-\left(\frac{2x}{3}\right)^2}} dx = \frac{5}{2} \text{arsen} \left(\frac{2x}{3} \right) + k$$

f) $\int \frac{dx}{x^2-2x+2}$

Solución:

$$\int \frac{dx}{x^2-2x+2} = \int \frac{dx}{(x-1)^2+1} = \text{ar} \tan(x-1) + k$$