# TABLA DE INTEGRALES INMEDIATAS

| TIPOS | FORMAS | |
|---|---|---|
| | **Simple** | **Compuesta** |
| **Potencial** $n \neq -1$ | $\int x^n dx = \frac{x^{n+1}}{n+1} + k$ | $\int f'(x) f(x)^n dx = \frac{f(x)^{n+1}}{n+1} + k$ |
| **Logarítmico** | $\int \frac{1}{x} dx = \int x^{-1} dx = \ln\lvert x\rvert + k$ | $\int \frac{f'(x)}{f(x)} dx = \ln\lvert f(x)\rvert + k$ |
| **Exponencial** | $\int e^x dx = e^x + k$<br>$\int a^x dx = \frac{a^x}{\ln a} + k$ | $\int e^{f(x)} f'(x) dx = e^{f(x)} + k$<br>$\int a^{f(x)} f'(x) dx = \frac{a^{f(x)}}{\ln a} + k$ |
| **Seno** | $\int \cos x dx = \text{sen } x + k$ | $\int \cos f(x) \cdot f'(x) dx = \text{sen } f(x) + k$ |
| **Coseno** | $\int \text{sen } x dx = -\cos x + k$ | $\int \text{sen } f(x) \cdot f'(x) dx = -\cos f(x) + k$ |
| **Tangente** | $\int \sec^2 x dx = \text{tg } x + k$<br>$\int (1 + \text{tg}^2 x) dx = \text{tg } x + k$<br>$\int \frac{1}{\cos^2 x} dx = \text{tg } x + k$ | $\int \sec^2 f(x) \cdot f'(x) dx = \text{tg } f(x) + k$<br>$\int \frac{f'(x)}{\cos^2 f(x)} dx = \text{tg } f(x) + k$ |
| **Cotangente** | $\int \text{cosec}^2 x dx = -\text{cotg } x + k$<br>$\int (1 + \text{cosec}^2 x) dx = -\text{cotg } x + k$<br>$\int \frac{1}{\text{sen}^2 x} dx = -\text{cotg } x + k$ | $\int \text{cosec}^2 f(x) \cdot f'(x) dx = -\text{cotg } f(x) + k$<br>$\int (1 + \text{cosec}^2 f(x)) f'(x) dx = -\text{cotg } f(x) + k$<br>$\int \frac{f'(x)}{\text{sen}^2 f(x)} dx = -\text{cotg } f(x) + k$ |
| **Arco seno** | $\int \frac{1}{\sqrt{1-x^2}} dx = \text{arcsen } x + k$ | $\int \frac{f'(x)}{\sqrt{1-f(x)^2}} dx = \text{arcsen } f(x) + k$ |
| **Arco tangente** | $\int \frac{1}{1+x^2} dx = \text{arctg } x + k$<br>$\int \frac{1}{a^2+x^2} dx = \frac{1}{a} \text{arctg} \frac{x}{a} + k$ | $\int \frac{f'(x)}{1+f(x)^2} dx = \text{arctg } f(x) + k$<br>$\int \frac{f'(x)}{a^2+f(x)^2} dx = \frac{1}{a} \text{arctg} \frac{f(x)}{a} + k$ |
| **Neperiano – Arco tangente** | $\int \frac{Mx+N}{ax^2+bx+c} dx = \text{neperiano} + \text{arco tangente} + k$<br>$M \neq 0, \quad ax^2+bx+c$ irreducible | |

**Fórmula de integración por partes**

Sean $f$ y $g$ dos funciones con derivadas continuas. Entonces:

$$\int fg' = fg - \int f'g$$

**Teorema Fundamental del Cálculo**

Si $f(x)$ es continua en $[a,b]$ y $F(x)=\int_a^x f(t)\,dt,$ entonces

1) $F(x)$ es derivable
2) $F'(x)=f(x) \quad \forall x\in[a,b]$

**Regla de Barrow**

Si $f(x)$ es una función continua en $[a,b]$ y $F(x)$ es una primitiva de $f(x),$ entonces

$$\int_a^b f(x)\,dx = \left[F(x)\right]_a^b = F(b)-F(a)$$