

FORMULARIO

Derivadas:

$$\frac{d}{dx} c = 0$$

$$\frac{d}{dx} x = 1$$

$$\frac{d}{dx} cu = c \frac{du}{dx}$$

$$\frac{d}{dx} (u + v + \dots) = \frac{du}{dx} + \frac{dv}{dx} + \dots$$

$$\frac{d}{dx} x^n = nx^{n-1}$$

$$\frac{d}{dx} u^n = nu^{n-1} \frac{du}{dx}$$

$$\frac{d}{dx} uv = u \frac{dv}{dx} + v \frac{du}{dx}$$

$$\frac{d}{dx} \left(\frac{u}{v} \right) = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$\frac{d}{dx} \sqrt{u} = \frac{\frac{du}{dx}}{2\sqrt{u}}$$

$$\frac{d}{dx} \operatorname{sen} u = \cos u \frac{du}{dx}$$

$$\frac{d}{dx} \cos u = -\operatorname{sen} u \frac{du}{dx}$$

$$\frac{d}{dx} \tan u = \sec^2 u \frac{du}{dx}$$

$$\frac{d}{dx} \cot u = -\operatorname{csc}^2 u \frac{du}{dx}$$

$$\frac{d}{dx} \sec u = \tan u \sec u \frac{du}{dx}$$

$$\frac{d}{dx} \csc u = -\cot u \csc u \frac{du}{dx}$$

$$\frac{d}{dx} \ln u = \frac{\frac{du}{dx}}{u}$$

$$\frac{d}{dx} e^u = e^u \frac{du}{dx}$$

$$\frac{d}{dx} \arcsen u = \frac{\frac{du}{dx}}{\sqrt{1-u^2}}$$

$$\frac{d}{dx} \arccos u = -\frac{\frac{du}{dx}}{\sqrt{1-u^2}}$$

$$\frac{d}{dx} \arctan u = \frac{\frac{du}{dx}}{1+u^2}$$

$$\frac{d}{dx} \operatorname{arccot} u = -\frac{\frac{du}{dx}}{1+u^2}$$

$$\frac{d}{dx} \operatorname{arcsec} u = \frac{\frac{du}{dx}}{u\sqrt{u^2-1}}$$

$$\frac{d}{dx} \operatorname{arccsc} u = -\frac{\frac{du}{dx}}{u\sqrt{u^2-1}}$$

Integrales:

$$\int dx = x + c$$

$$\int c u dx = c \int u dx$$

$$\int e^u du = e^u + c$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + c$$

$$\int \frac{du}{u} = \ln u + c$$

$$\int \frac{dx}{x} = \ln x + c$$

$$\int (u + v + \dots) dx = \int u dx + \int v dx + \dots$$

$$\int u^n du = \frac{u^{n+1}}{n+1} + c \quad \text{para } u \neq -1$$

$$\int \sqrt{u^2 + a^2} \, du = \frac{u}{2} \sqrt{u^2 + a^2} + \frac{a^2}{2} \ln(u + \sqrt{u^2 + a^2}) + c$$

$$\int \sqrt{u^2 - a^2} \, du = \frac{u}{2} \sqrt{u^2 - a^2} - \frac{a^2}{2} \ln(u + \sqrt{u^2 - a^2}) + c$$

$$\int \sqrt{a^2 - u^2} \, du = \frac{u}{2} \sqrt{a^2 - u^2} + \frac{a^2}{2} \operatorname{arc\,sen} \frac{u}{a} + c$$

$$\int \frac{du}{\sqrt{u^2 + a^2}} = \ln(u + \sqrt{u^2 + a^2}) + c$$

$$\int \frac{du}{\sqrt{u^2 - a^2}} = \ln(u + \sqrt{u^2 - a^2}) + c$$

$$\int \frac{du}{\sqrt{a^2 - u^2}} = \operatorname{arc\,sen} \frac{u}{a} + c$$

$$\int \frac{du}{u^2 + a^2} = \frac{1}{a} \operatorname{arc\,tan} \frac{u}{a} + c$$

$$\int \frac{du}{u^2 - a^2} = \frac{1}{2a} \ln \frac{u - a}{u + a} + c$$

$$\int \frac{du}{a^2 - u^2} = \frac{1}{2a} \ln \frac{a + u}{a - u} + c$$

$$\int \operatorname{sen} u \, du = -\operatorname{cos} u + c$$

$$\int \operatorname{cos} u \, du = \operatorname{sen} u + c$$

$$\int \operatorname{tan} u \, du = \ln \operatorname{sec} u + c$$

$$\int \operatorname{cot} u \, du = \ln \operatorname{sen} u + c$$

$$\int \operatorname{sec} u \, du = \ln(\operatorname{tan} u + \operatorname{sec} u) + c$$

$$\int \operatorname{csc} u \, du = \ln(\operatorname{csc} u - \operatorname{cot} u) + c$$

$$\int \operatorname{sec}^2 u \, du = \operatorname{tan} u + c$$

$$\int \operatorname{csc}^2 u \, du = -\operatorname{cot} u + c$$

$$\int \operatorname{tan} u \operatorname{sec} u \, du = \operatorname{sec} u + c$$

$$\int \operatorname{cot} u \operatorname{csc} u \, du = -\operatorname{csc} u + c$$

Principales identidades utilizadas en las integrales trigonométricas:

$$\operatorname{sen}^2 x + \operatorname{cos}^2 x = 1$$

$$\operatorname{cot}^2 x + 1 = \operatorname{csc}^2 x$$

$$\operatorname{cos}^2 x = \frac{1}{2}(1 + \operatorname{cos} 2x)$$

$$\operatorname{tan} x = \frac{\operatorname{sen} x}{\operatorname{cos} x}$$

$$\operatorname{sen} x = \frac{1}{\operatorname{csc} x}$$

$$\operatorname{tan} x = \frac{1}{\operatorname{cot} x}$$

$$\operatorname{sec} x = \frac{1}{\operatorname{cos} x}$$

$$\operatorname{sen} 3x = 3 \operatorname{sen} x - 4 \operatorname{sen}^3 x$$

$$\operatorname{sen} 4x = 4 \operatorname{sen} x \operatorname{cos} x - 8 \operatorname{sen}^3 x \operatorname{cos} x$$

$$\operatorname{tan}^2 x + 1 = \operatorname{sec}^2 x$$

$$\operatorname{sen}^2 x = \frac{1}{2}(1 - \operatorname{cos} 2x)$$

$$\operatorname{sen} 2x = 2 \operatorname{sen} x \operatorname{cos} x$$

$$\operatorname{cot} x = \frac{\operatorname{cos} x}{\operatorname{sen} x}$$

$$\operatorname{cos} x = \frac{1}{\operatorname{sec} x}$$

$$\operatorname{cot} x = \frac{1}{\operatorname{tan} x}$$

$$\operatorname{csc} x = \frac{1}{\operatorname{sen} x}$$

$$\operatorname{cos} 3x = 4 \operatorname{cos}^3 x - 3 \operatorname{cos} x$$

$$\operatorname{cos} 4x = 8 \operatorname{cos}^4 x - 8 \operatorname{cos}^2 x + 1$$

Integración por partes: $\int u dv = uv - \int v du$

Cambios de variable trigonométricos:

para el radical	hacer el cambio
$\sqrt{a^2x^2 + b^2}$	$x = \frac{b}{a} \tan t$
$\sqrt{a^2x^2 - b^2}$	$x = \frac{b}{a} \sec t$
$\sqrt{b^2 - a^2x^2}$	$x = \frac{b}{a} \sen t$

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