

## IDENTIDADES TRIGONOMETRICAS

$$1) \tan x = \frac{\sin x}{\cos x} = \frac{1}{\cot x} \quad 2) \cot x = \frac{\cos x}{\sin x} = \frac{1}{\tan x}$$

$$3) \sec x = \frac{1}{\cos x} \quad 4) \csc x = \frac{1}{\sin x}$$

$$5) \sin^2 x + \cos^2 x = 1 \quad 6) 1 + \cot^2 x = \csc^2 x$$

$$7) \tan^2 x + 1 = \sec^2 x \quad 8) \sin^2 x = \frac{1 - \cos 2x}{2}$$

$$9) \cos^2 x = \frac{1 + \cos 2x}{2} \quad 10) \sin^2 2x = \frac{1 - \cos 4x}{2}$$

$$11) \sin(x+B) = \sin x \cdot \cos B + \cos x \cdot \sin B$$

$$12) \sin(x-B) = \sin x \cdot \cos B - \cos x \cdot \sin B$$

$$13) \cos(x+B) = \cos x \cdot \cos B - \sin x \cdot \sin B$$

$$14) \cos(x-B) = \cos x \cdot \cos B + \sin x \cdot \sin B$$

$$15) \sin 2x = 2 \sin x \cdot \cos x$$

$$16) \cos 2x = \cos^2 x - \sin^2 x = 1 - 2 \sin^2 x = 2 \cos^2 x - 1$$

$$17) \sin x = 2 \sin \frac{1}{2} x \cdot \cos \frac{1}{2} x$$

$$18) \cos x = \cos^2 \frac{1}{2} x - \sin^2 \frac{1}{2} x$$

$$19) \frac{\sin^2 x}{4} = \sin^2 \frac{1}{2} x \cdot \cos^2 \frac{1}{2} x$$

$$20) \sin^2 \left( \frac{x}{2} \right) = \frac{1 - \cos x}{2} \quad \text{ó} \quad \sin^2 x =$$

$$21) \cos^2 \left( \frac{x}{2} \right) = \frac{1 + \cos x}{2}$$

$$22) \tan 2x = \frac{2 \tan x}{1 - \tan^2 x} \quad \text{ó} \quad \tan x = \frac{1 - \cos 2x}{\sin 2x}$$

$$23) \sin m x \cos n x = \frac{1}{2} [\sin(m+n)x + \sin(m-n)x]$$

$$24) \sin m x \sin n x = \frac{1}{2} [\cos(m-n)x - \cos(m+n)x]$$

$$25) \cos m x \cos n x = \frac{1}{2} [\cos(m-n)x + \cos(m+n)x]$$

$$1) f(x) = c \text{ constante} \Rightarrow f'(x) = 0$$

$$2) g(x) = c f(x) \Rightarrow g'(x) = c \cdot f'(x)$$

$$3) h(x) = f(x) \pm g(x) \Rightarrow h'(x) = f'(x) \pm g'(x)$$

$$4) h(x) = f(x) \cdot g(x) \Rightarrow h'(x) = f(x)g'(x) + g(x)f'(x)$$

$$5) h(x) = \frac{f(x)}{g(x)} \Rightarrow h'(x) = \frac{g(x)f'(x) - f(x)g'(x)}{[g(x)]^2}$$

$$6) h(x) = [f(x)]^n \Rightarrow h'(x) = n[f(x)]^{n-1} f'(x)$$

$$7) f(u) = \operatorname{sen} u \Rightarrow f'(u) = \operatorname{cosec} u \cdot u'$$

$$8) f(u) = \operatorname{cosec} u \Rightarrow f'(u) = -\operatorname{sen} u \cdot u'$$

$$9) f(u) = \operatorname{tan} u \Rightarrow f'(u) = \operatorname{sec}^2 u \cdot u'$$

$$10) f(u) = \operatorname{cot} u \Rightarrow f'(u) = -\operatorname{csc}^2 u \cdot u'$$

$$11) f(u) = \operatorname{sec} u \Rightarrow f'(u) = \operatorname{sec} u \cdot \operatorname{tan} u \cdot u'$$

$$12) f(u) = \operatorname{csc} u \Rightarrow f'(u) = -\operatorname{csc} u \cdot \operatorname{cot} u \cdot u'$$

$$13) f(u) = a^u \quad a = \text{cte} \Rightarrow f'(u) = a^u \ln a \cdot u'$$

$$14) f(u) = e^u \Rightarrow f'(u) = e^u \cdot u'$$

$$15) f(u) = \operatorname{Ln} u \Rightarrow f'(u) = \frac{1}{u} \cdot u'$$

$$16) f(u) = \operatorname{Log}_a u \Rightarrow f'(u) = \frac{\operatorname{Log}_a e}{u} \cdot u'$$

$$17) f(x) = x^{-n} = \frac{1}{x^n} \Rightarrow f'(x) = -\frac{n x^{n-1}}{x^{2n}}$$

$$18) f(x) = \frac{c}{f(x)} \Rightarrow f'(x) = -\frac{c \cdot f'(x)}{[f(x)]^2}$$

$$19) f(x) = \frac{f(x)}{c} \Rightarrow f'(x) = \frac{f'(x)}{c} = \frac{1}{c} f'(x)$$

$$20) f(u) = \operatorname{sen}^{-1} u \Rightarrow f'(u) = \frac{1}{\sqrt{1-u^2}} \cdot u'$$

$$21) f(u) = \operatorname{cosec}^{-1} u \Rightarrow f'(u) = -\frac{1}{\sqrt{1-u^2}} \cdot u'$$

$$22) f(u) = \operatorname{tan}^{-1} u \Rightarrow f'(u) = \frac{1}{1+u^2} \cdot u'$$

$$23) f(u) = \operatorname{sec}^{-1} u \Rightarrow f'(u) = \frac{1}{u\sqrt{u^2-1}} \cdot u'$$

$$24) f(u) = \operatorname{csc}^{-1} u \Rightarrow f'(u) = -\frac{1}{u\sqrt{u^2-1}} \cdot u'$$

# INTEGRALES

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

$$1) \int 1 \, du = u + C$$

$$8) \int \tan u \, du = \ln |\sec u| + C$$

$$2) \int u^n \, du = \frac{u^{n+1}}{n+1} + C, \quad n \neq -1$$

$$9) \int \cot u \, du = \ln |\operatorname{sen} u| + C$$

$$3) \int \frac{du}{u} = \ln |u| + C$$

$$10) \int \sec u \, du = \ln |\sec u + \tan u| + C$$

$$11) \int \csc u \, du = \ln |\csc u - \cot u| + C$$

$$4) \int e^u \, du = e^u + C$$

$$12) \int \sec u \tan u \, du = \sec u + C$$

$$13) \int \csc u \cot u \, du = -\csc u + C$$

$$5) \int a^u \, du = \frac{a^u}{\ln a} + C$$

$$14) \int \sec^2 u \, du = \tan u + C$$

$$6) \int [f(x)]^n f'(x) \, dx = \frac{f(x)^{n+1}}{n+1}$$

$$15) \int \csc^2 u \, du = -\cot u + C$$

$$7) \int \frac{f'(x)}{f(x)} \, dx = \ln |f(x)|$$

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

$$16) \int \operatorname{sen}^{-1} x \, dx = x \operatorname{sen}^{-1} x + \sqrt{1-x^2} + C$$

$$17) \int \tan^{-1} x \, dx = x \tan^{-1} x - \frac{1}{2} \ln(1+x^2) + C$$

$$18) \int \sec^{-1} x \, dx = x \sec^{-1} x - \ln |x + \sqrt{x^2-1}| + C$$

$$19) \int \frac{du}{\sqrt{a^2-u^2}} = \operatorname{sen}^{-1} \frac{u}{a} + C$$

$$20) \int \frac{du}{a^2+u^2} = \frac{1}{a} \tan^{-1} \frac{u}{a} + C$$

$$21) \int \frac{du}{u\sqrt{u^2-a^2}} = \frac{1}{a} \sec^{-1} \frac{u}{a} + C$$

$$22) \int \frac{du}{a^2-u^2} = \frac{1}{2a} \ln \left| \frac{a+u}{a-u} \right| + C$$

$$23) \int \frac{1 \, du}{u^2-a^2} = \frac{1}{2a} \ln \left| \frac{u-a}{u+a} \right| + C$$

$$24) \int \frac{1 \, du}{\sqrt{a^2+u^2}} = \ln |u + \sqrt{a^2+u^2}| + C$$

$$25) \int \frac{du}{\sqrt{u^2-a^2}} = \ln |u + \sqrt{u^2-a^2}| + C$$

$$26) \int \sqrt{a^2-u^2} \, du = \frac{1}{2} \left[ u\sqrt{a^2-u^2} + a^2 \operatorname{sen}^{-1} \frac{u}{a} \right] + C$$

$$27) \int \sqrt{u^2 \pm a^2} \, du = \frac{1}{2} \left[ u\sqrt{u^2 \pm a^2} \pm a^2 \ln |u + \sqrt{u^2 \pm a^2}| \right] + C$$