



## Derivadas

1.  $\frac{d}{dx}(c) = 0$
2.  $\frac{d}{dx}(x) = 1$
3.  $\frac{d}{dx}(cu) = c \frac{du}{dx}$
4.  $\frac{d}{dx}(u + v) = \frac{du}{dx} + \frac{dv}{dx}$
5.  $\frac{d}{dx}(x^n) = n x^{n-1}$
6.  $\frac{d}{dx}(u^n) = n u^{n-1} \frac{du}{dx}$
7.  $\frac{d}{dx}(u \cdot v) = u \frac{dv}{dx} + v \frac{du}{dx}$
8.  $\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$
9.  $\frac{d}{dx}(\text{sen } u) = \cos u \frac{du}{dx}$
10.  $\frac{d}{dx}(\cos u) = -\text{sen } u \frac{du}{dx}$
11.  $\frac{d}{dx}(\tan u) = \sec^2 u \frac{du}{dx}$
12.  $\frac{d}{dx}(\cot u) = -\text{csc}^2 u \frac{du}{dx}$
13.  $\frac{d}{dx}(\sec u) = \sec u \tan u \frac{du}{dx}$
14.  $\frac{d}{dx}(\csc u) = -\text{csc } u \cot u \frac{du}{dx}$
15.  $\frac{d}{dx}(\arcsen u) = \frac{1}{\sqrt{1-u^2}} \frac{du}{dx}$
16.  $\frac{d}{dx}(\arccos u) = -\frac{1}{\sqrt{1-u^2}} \frac{du}{dx}$
17.  $\frac{d}{dx}(\arctan u) = \frac{1}{1+u^2} \frac{du}{dx}$
18.  $\frac{d}{dx}(\text{arccot } u) = -\frac{1}{1+u^2} \frac{du}{dx}$
19.  $\frac{d}{dx}(\text{arcsec } u) = \frac{1}{u\sqrt{u^2-1}} \frac{du}{dx}$
20.  $\frac{d}{dx}(\text{arccsc } u) = -\frac{1}{u\sqrt{u^2-1}} \frac{du}{dx}$
21.  $\frac{d}{dx}(\log_a u) = \frac{1}{u} \log_a e \frac{du}{dx}$
22.  $\frac{d}{dx}(\ln u) = \frac{1}{u} \frac{du}{dx}$
23.  $\frac{d}{dx}(a^u) = a^u \ln a \frac{du}{dx}$
24.  $\frac{d}{dx}(e^u) = e^u \frac{du}{dx}$
25.  $\frac{d}{dx}(u^v) = v u^{v-1} \frac{du}{dx} + u^v \ln u \frac{dv}{dx}$

### Regla de la cadena

$$\frac{df}{du} \cdot \frac{du}{dx} = \frac{df}{dx}$$

## Integrales

1.  $\int (du + dv) = \int du + \int dv + c$
2.  $\int a \, du = a \int du + c$
3.  $\int dx = x + c$
4.  $\int u^n \, du = \frac{u^{n+1}}{n+1} + c, n \neq -1$
5.  $\int \frac{du}{u} = \ln |u| + c$
6.  $\int a^u \, du = \frac{a^u}{\ln a} + c$
7.  $\int e^u \, du = e^u + c$
8.  $\int \text{sen } u \, du = -\cos u + c$
9.  $\int \cos u \, du = \text{sen } u + c$
10.  $\int \sec^2 u \, du = \tan u + c$
11.  $\int \csc^2 u \, du = -\cot u + c$
12.  $\int \sec u \tan u \, du = \sec u + c$
13.  $\int \csc u \cot u \, du = -\csc u + c$
14.  $\int \tan u \, du = -\ln |\cos u| + c$
15.  $\int \cot u \, du = \ln |\text{sen } u| + c$
16.  $\int \sec u \, du = \ln |\sec u + \tan u| + c$
17.  $\int \csc u \, du = \ln |\csc u - \cot u| + c$
18.  $\int \frac{du}{u^2 + a^2} = \frac{1}{a} \arctan \frac{u}{a} + c$
19.  $\int \frac{du}{u^2 - a^2} = \frac{1}{2a} \ln \left| \frac{u-a}{u+a} \right| + c, u^2 > a^2$
20.  $\int \frac{du}{a^2 - u^2} = \frac{1}{2a} \ln \left| \frac{a+u}{a-u} \right| + c, u^2 < a^2$
21.  $\int \frac{du}{\sqrt{a^2 - u^2}} = \arcsen \frac{u}{a} + c$
22.  $\int \frac{du}{\sqrt{u^2 \pm a^2}} = \ln |u + \sqrt{u^2 \pm a^2}| + c$
23.  $\int \sqrt{a^2 - u^2} \, du = \frac{u}{2} \sqrt{a^2 - u^2} + \frac{a^2}{2} \arcsen \frac{u}{a} + c$
24.  $\int \sqrt{u^2 \pm a^2} \, du = \frac{u}{2} \sqrt{u^2 \pm a^2} \pm \frac{a^2}{2} \ln |u + \sqrt{u^2 \pm a^2}| + c$
25.  $\int \frac{du}{u\sqrt{u^2 - a^2}} = \frac{1}{a} \text{arcsec} \frac{u}{a} + c$

### Integración por partes

$$26. \int u \, dv = uv - \int v \, du$$



### Propiedades de los logaritmos

Si  $A$  y  $B$  son números reales positivos

•  $\log A + \log B = \log(AB)$

•  $\log A - \log B = \log\left(\frac{A}{B}\right)$

•  $r \cdot \log B = \log B^r$

### Identidades Trigonómicas

1.  $\csc A = \frac{1}{\sen A}$

2.  $\sec A = \frac{1}{\cos A}$

3.  $\cot A = \frac{1}{\tan A}$

4.  $\tan A = \frac{\sen A}{\cos A}$

5.  $\cot A = \frac{\cos A}{\sen A}$

6.  $\sen^2 A + \cos^2 A = 1$

7.  $\tan^2 A + 1 = \sec^2 A$

8.  $1 + \cot^2 A = \csc^2 A$

9.  $\sen^2 A = \frac{1}{2} - \frac{1}{2} \cos 2A$

10.  $\cos^2 A = \frac{1}{2} + \frac{1}{2} \cos 2A$

11.  $\sen 2A = 2 \sen A \cos A$

12.  $\cos 2A = \cos^2 A - \sen^2 A$

### Ángulos Compuestos

13.  $2\sen A \sen B = \cos(A - B) - \cos(A + B)$

14.  $2\sen A \cos B = \sen(A + B) + \sen(A - B)$

15.  $2\cos A \sen B = \sen(A + B) - \sen(A - B)$

16.  $2\cos A \cos B = \cos(A + B) + \cos(A - B)$

17.  $\sen(A + B) = \sen A \cos B + \cos A \sen B$

18.  $\sen(A - B) = \sen A \cos B - \cos A \sen B$

19.  $\cos(A + B) = \cos A \cos B - \sen A \sen B$

20.  $\cos(A - B) = \cos A \cos B + \sen A \sen B$

21.  $\tan(2A) = \frac{2 \tan A}{1 - \tan^2 A}$

22.  $\tan \frac{A}{2} = \frac{1 - \cos A}{\sen A}$

### Sumatorias y sus propiedades

1.  $\sum_{i=1}^n a_i = a_1 + a_2 + a_3 + \dots + a_n$

2.  $\sum_{i=1}^n (a_i + b_i) = \sum_{i=1}^n a_i + \sum_{i=1}^n b_i$

3.  $\sum_{i=1}^n c \cdot a_i = c \sum_{i=1}^n a_i$

4.  $\sum_{i=1}^n a = a \cdot n$

5.  $\sum_{i=1}^n i = \frac{n(n+1)}{2}$

6.  $\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$

7.  $\sum_{i=1}^n i^3 = \left(\frac{n(n+1)}{2}\right)^2$

### Círculo Trigonómico

