Formulario para Cálculo Diferencial

i. $\dfrac{dc}{dx} = 0$

ii. $\dfrac{dx}{dx} = 1$

iii. $\dfrac{d(u+v)}{dx} = \dfrac{du}{dx} + \dfrac{dv}{dx}$

iv. $\dfrac{d(c \cdot v)}{dx} = c\,\dfrac{dv}{dx}$

v. $\dfrac{d(u \cdot v)}{dx} = u\,\dfrac{dv}{dx} + v\,\dfrac{du}{dx}$

vi. $\dfrac{d(v^n)}{dx} = nv^{n-1}\,\dfrac{dv}{dx}$

vii. $\dfrac{d}{dx}\left(\dfrac{u}{v}\right) = \dfrac{v\,\dfrac{du}{dx} - u\,\dfrac{dv}{dx}}{v^2}$

viii. $\dfrac{dy}{dx} = \dfrac{dy}{dv} \cdot \dfrac{dv}{dx}$

ix. $\dfrac{dy}{dx} = \dfrac{1}{\dfrac{dx}{dy}}$

x. $\dfrac{d(\sin v)}{dx} = \cos v\,\dfrac{dv}{dx}$

xi. $\dfrac{d(\cos v)}{dx} = -\sin v\,\dfrac{dv}{dx}$

xii. $\dfrac{d(\tan v)}{dx} = \sec^2 v\,\dfrac{dv}{dx}$

xiii. $\dfrac{d(\cot v)}{dx} = -\csc^2 v\,\dfrac{dv}{dx}$

xiv. $\dfrac{d(\sec v)}{dx} = \sec v\,\tan v\,\dfrac{dv}{dx}$

xv. $\dfrac{d(\csc v)}{dx} = -\csc v\,\cot v\,\dfrac{dv}{dx}$

xvi. $\dfrac{d(\arcsin v)}{dx} = \dfrac{1}{\sqrt{1-v^2}}\,\dfrac{dv}{dx}$

xvii. $\dfrac{d(\arccos v)}{dx} = \dfrac{-1}{\sqrt{1-v^2}}\,\dfrac{dv}{dx}$

xviii. $\dfrac{d(\arctan v)}{dx} = \dfrac{1}{1+v^2}\,\dfrac{dv}{dx}$

xix. $\dfrac{d(\operatorname{arccot} v)}{dx} = \dfrac{-1}{1+v^2}\,\dfrac{dv}{dx}$

xx. $\dfrac{d(\operatorname{arcsec} v)}{dx} = \dfrac{1}{v\sqrt{v^2-1}}\,\dfrac{dv}{dx}$

xxi. $\dfrac{d(\operatorname{arccsc} v)}{dx} = \dfrac{-1}{v\sqrt{v^2-1}}\,\dfrac{dv}{dx}$

xxii. $\dfrac{d(\ln v)}{dx} = \dfrac{1}{v}\,\dfrac{dv}{dx}$

xxiii. $\dfrac{d(\log_a v)}{dx} = \dfrac{\log_a e}{v}\,\dfrac{dv}{dx}$

xxiv. $\dfrac{d(a^v)}{dx} = a^v \ln a\,\dfrac{dv}{dx}$

xxv. $\dfrac{d(e^v)}{dx} = e^v\,\dfrac{dv}{dx}$

xxvi. $\dfrac{d(u^v)}{dx} = \left(v \cdot u^{v-1} + \ln u \cdot u^v\right)\,\dfrac{dv}{dx}$

Formulario para Cálculo Integral

i. $\int (dv + dw) = \int dv + \int dw$

ii. $\int a\,dv = a\int dv$

iii. $\int dx = x + C$

iv. $\int v^n\,dv = \dfrac{v^{n+1}}{n+1} + C$

v. $\int \dfrac{dv}{v} = \ln|v| + C$

vi. $\int a^v\,dv = \dfrac{a^v}{\ln a} + C$

vii. $\int e^v\,dv = e^v + C$

viii. $\int \ln v\,dv = v\,\ln v - v + C$

ix. $\int \sin v\,dv = -\cos v + C$

x. $\int \cos v\,dv = \sin v + C$

xi. $\int \sec^2 v\,dv = \tan v + C$

xii. $\int \csc^2 v\,dv = -\cot v + C$

xiii. $\int \sec v \tan v\,dv = \sec v + C$

xiv. $\int \sec v\,dv = \ln(\sec v + \tan v) + C$

xv. $\int \dfrac{dv}{a^2 - v^2} = \dfrac{1}{2\,a}\,\ln\left(\dfrac{a+v}{a-v}\right) + C$

xvi. $\int \dfrac{dv}{a^2 + v^2} = \dfrac{1}{a}\,\arctan\left(\dfrac{v}{a}\right) + C$

xvii. $\int \dfrac{dv}{v^2 - a^2} = \dfrac{1}{2\,a}\,\ln\left(\dfrac{v-a}{v+a}\right) + C$

xviii. $\int \dfrac{dv}{\sqrt{a^2 - v^2}} = \arcsin\left(\dfrac{v}{a}\right) + C$

xix. $\int \dfrac{dv}{\sqrt{v^2 \pm a^2}} = \ln\left(v + \sqrt{v^2 \pm a^2}\right) + C$

xx. $\int \sqrt{a^2 - v^2}\,dv = \dfrac{v}{2}\sqrt{a^2 - v^2} + \dfrac{a^2}{2}\,\arcsin\left(\dfrac{v}{a}\right) + C$

xxi. $\int \sqrt{v^2 \pm a^2}\,dv = \dfrac{v}{2}\sqrt{v^2 \pm a^2} \pm \dfrac{a^2}{2}\,\ln\left(v + \sqrt{v^2 \pm a^2}\right) + C$

xxii. $\int u\,dv = u \cdot v - \int v\,du$

Sustituciones Trigonométricas

✓ $\sqrt{a^2 - u^2}$ → hágase $u = a\,\sin z \to a\,\cos z$

✓ $\sqrt{a^2 + u^2}$ → hágase $u = a\,\tan z \to a\,\sec z$

✓ $\sqrt{u^2 - a^2}$ → hágase $u = a\,\sec z \to a\,\tan z$