FORMULARIO DE ÁLGEBRA Y TRIGONOMETRÍA

Teorema de Pitágoras

$$a^2 + b^2 = c^2$$

Binomio de Newton

$$(x+y)^n = n^n + \frac{nx^{n-1}y}{1!} + \frac{n(n-1)x^{n-2}y^2}{2!} + \frac{n(n-1)(n-2)x^{n-3}y^3}{3!} + \ldots + y^n$$

Ley de senos

$$\frac{a}{senA} = \frac{b}{SenB} = \frac{c}{SenC}$$

Ley de cosenos

$$c^2 = a^2 + b^2 - 2ab\cos C$$

Identidades trigonométricas

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

$$\cos^2(A) = \frac{1}{2} + \frac{1}{2}\cos(2A) = 1 - sen^2(A)$$

FORMULARIO DE CÁLCULO DIFERENCIAL

Fórmulas básicas de derivación

- $\frac{dc}{dx} = 0$
- $\frac{d(u^n)}{dx} = nu^{n-1}\frac{du}{dx}$
- $\frac{d(uv)}{dx} = u\frac{dv}{dx} + v\frac{du}{dx}$
- $\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$

Derivadas de funciones trigonométricas

- $\frac{d}{dx}(\sin u) = \cos u\frac{du}{dx}$
- $\frac{d}{dx}(\cos u) = -\sin u\frac{du}{dx}$
- $\frac{d}{dx}(\tan u) = \sec^2 u\frac{du}{dx}$
- $\frac{d}{dx}(\cot u) = -\csc^2 u\frac{du}{dx}$
- $\frac{d}{dx}(\sec u) = \tan u\sec u\frac{du}{dx}$
- $\frac{d}{dx}(\csc u) = -\cot u\csc u\frac{du}{dx}$

Derivadas de funciones trigonométricas inversas

- $\frac{d}{dx}(\sin^{-1} u) = \frac{1}{\sqrt{1-u^2}}\frac{du}{dx}$
- $\frac{d}{dx}(\cos^{-1} u) = -\frac{1}{\sqrt{1-u^2}}\frac{du}{dx}$
- $\frac{d}{dx}(\tan^{-1} u) = \frac{1}{1+u^2}\frac{du}{dx}$
- $\frac{d}{dx}(\cot^{-1} u) = -\frac{1}{1+u^2}\frac{du}{dx}$
- $\frac{d}{dx}(\sec^{-1} u) = \frac{1}{u\sqrt{u^2-1}}\frac{du}{dx}$
- $\frac{d}{dx}(\csc^{-1} u) = -\frac{1}{u\sqrt{u^2-1}}\frac{du}{dx}$

Derivadas de funciones exponenciales y logarítmicas

- $\frac{d}{dx}(\log_a u) = \frac{\log_a e}{u}\frac{du}{dx}$
- $\frac{d}{dx}(\ln u) = \frac{1}{u}\frac{du}{dx}$
- $\frac{d}{dx}(a^u) = a^u \ln a\frac{du}{dx}$
- $\frac{d}{dx}(e^u) = e^u\frac{du}{dx}$

FORMULARIO DE CÁLCULO INTEGRAL

$$\int v^n dv = \frac{v^{n+1}}{n+1} + c$$

$$\int a^v dv = \frac{a^v}{\ln(a)} + c$$

$$\int e^v dv = e^v + c$$

$$\int \frac{dv}{v} = \ln(v) + c$$

$$\int senv dv = -\cos v + c$$

$$\int \cos v dv = senv + c$$

$$\int \tan v dv = \ln(\sec v) + c$$

$$\int ctgv dv = \ln(senv) + c$$

$$\int \sec v dv = \ln(\sec v + \tan v) + c$$

$$\int \csc v dv = \ln(\csc v - ctgv) + c$$

$$\int \sec^2 v dv = \tan v + c$$

$$\int \csc^2 v dv = -ctgv + c$$

$$\int \sec v \tan v dv = \sec v + c$$

$$\int \csc v ctgv dv = -\csc v + c$$

$$\int \sqrt{v^2 \pm a^2}\, dv = \frac{v}{2}\sqrt{v^2 \pm a^2} \pm \frac{a^2}{2}\ln\left|v + \sqrt{v^2 \pm a^2}\right| + c$$

$$\int \sqrt{a^2 - v^2}\, dv = \frac{v}{2}\sqrt{v^2 - a^2} + \frac{a^2}{2} arcsen\left(\frac{v}{a}\right) + c$$

$$\int \frac{dv}{\sqrt{v^2 \pm a^2}} = \ln\left|v + \sqrt{v^2 \pm a^2}\right| + c$$

$$\int \frac{dv}{\sqrt{a^2 - v^2}} = arcsen\left(\frac{v}{a}\right) + c$$

$$\int \frac{dv}{v^2 + a^2} = \frac{1}{a}\arctan\left(\frac{v}{a}\right) + c$$

$$\int \frac{dv}{v^2 - a^2} = \frac{1}{2a}\ln\left|\frac{v-a}{v+a}\right| + c$$

$$\int \frac{dv}{a^2 - v^2} = \frac{1}{2a}\ln\left|\frac{a+v}{a-v}\right| + c$$

Área bajo la curva : $\int_a^b f(x)\, dx$

Área entre curvas : $\int_a^b [f(x) - g(x)]dx$

Área del sólido de revolución : $2\pi\int_a^b f(x)\sqrt{1+\left[f'(x)\right]^2}\, dx$

Volumen del sólido de revolución : $\pi\int_a^b f^2(x)dx$

Longitud de arco : $\int_a^b \sqrt{1+(y')^2}\, dx$