IDENTIDADES TRIGONOMÉTRICAS

$sen\ \theta = \dfrac{1}{\csc\theta}$

$\cot\theta = \dfrac{\cos\theta}{sen\ \theta}$

$tan\theta = \dfrac{sen\theta}{cos\theta}$

$cos\theta csc\theta = cot\theta$

$\cos\theta = \dfrac{1}{sec\theta}$

$tan\theta = \dfrac{1}{cot\theta}$

$csc^2\theta = 1 + cot^2\theta$

$sen\theta = cos\theta tan\theta$

$sec^2\ \theta = tan^2\ \theta + 1$

$cos\ (-\theta) = cos\ \theta$

$sec\ (-\theta) = sec\ \theta$

$sen\ (-\theta) = -sen\ \theta$

$csc\ (-\theta) = -csc\ \theta$

$tan\ (-\theta) = -tan\ \theta$

$cot\ (-\theta) = -cot\ \theta$

$sen^2\theta + cos^2\theta = 1$

$sen\ (\alpha+\beta) = sen\alpha\cos\beta + \cos\alpha\ sen\ \beta$

$sen\ \dfrac{\alpha}{2} = \pm\sqrt{\dfrac{1-\cos\alpha}{2}}$

$sen\ (\alpha-\beta) = sen\alpha\cos\beta - \cos\alpha\ sen\ \beta$

$sen\ 2\alpha = 2sen\alpha\cos\alpha$

$sen^2\alpha = \dfrac{1-cos2\alpha}{2}$

$sen\ \left(\dfrac{\pi}{2}-x\right) = \cos(x)$

$cos\ (\alpha+\beta) = cos\alpha\cos\beta - \text{sen}\ \alpha\ sen\ \beta$

$cos^2\alpha = \dfrac{1+\cos 2\alpha}{2}$

$$\cos 2\alpha = \begin{cases} cos^2\alpha - sen^2\alpha \\ 1 - 2sen^2\alpha \\ 2cos^2\alpha - 1 \\ \dfrac{1-\tan^2 x}{1+\tan^2 x} \end{cases}$$

$\cos\dfrac{\alpha}{2} = \pm\sqrt{\dfrac{1+cos\alpha}{2}}$

$cos\ (\alpha-\beta) = cos\alpha\cos\beta + \text{sen}\ \alpha\ sen\ \beta$

$cos\ \left(\dfrac{\pi}{2}-x\right) = \text{sen}(x)$

$\tan(\alpha+\beta) = \dfrac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}$

$tan^2\alpha = \dfrac{1-\cos 2\alpha}{1+\cos 2\alpha}$

$$\tan\frac{\alpha}{2} = \begin{cases} \pm\sqrt{\dfrac{1-cos\alpha}{1+cos\alpha}} \\ \dfrac{sen\alpha}{1+cos\alpha} = \dfrac{1-cos\alpha}{sen\alpha} \end{cases}$$

$\tan 2\alpha = \dfrac{2tan\alpha}{1-tan^2\alpha}$

$\tan(\alpha-\beta) = \dfrac{tan\alpha - \tan\beta}{1+tan\alpha\tan\beta}$

$tan\ \left(\dfrac{\pi}{2}-x\right) = \cot(x)$

$\cot 2\alpha = \dfrac{\cot\theta - \tan\theta}{2}$

$sen\alpha\cos\beta = \dfrac{1}{2}[sen(\alpha+\beta) + sen(\alpha-\beta)]$

$cos\alpha\ \text{sen}\ \beta = \dfrac{1}{2}[sen(\alpha+\beta) - sen(\alpha-\beta)]$

$cos\alpha\cos\beta = \dfrac{1}{2}[cos(\alpha+\beta) + cos(\alpha-\beta)]$

$sen\alpha\ \text{sen}\ \beta = -\dfrac{1}{2}[cos(\alpha+\beta) - cos(\alpha-\beta)]$

$sen\alpha + \text{sen}\ \beta = 2sen\ \dfrac{\alpha+\beta}{2} cos\dfrac{\alpha-\beta}{2}$

$sen\alpha - \text{sen}\ \beta = 2cos\ \dfrac{\alpha+\beta}{2} sen\dfrac{\alpha-\beta}{2}$

$cos\alpha + \cos\beta = 2cos\ \dfrac{\alpha+\beta}{2} cos\dfrac{\alpha-\beta}{2}$

$cos\alpha - \cos\beta = -2sen\ \dfrac{\alpha+\beta}{2} sen\dfrac{\alpha-\beta}{2}$

$arc\ sen(sen\ x) = x$

$arc\ \tan(\tan x) = x$

$arc\ \sec(\sec x) = x$

$arc\ cos(\cos x) = x$

$arc\ cot(\cot x) = x$

$arc\ csc(\csc x) = x$

DIFERENCIALES

$du = \dfrac{du}{u}dx$

$d(au) = adu$

$d(u+v) = du + dv$

$d(u^n) = nu^{n-1}du$

$d\left(\dfrac{u}{v}\right) = \dfrac{u'v - v'u}{v^2}$

$d(ln\ u) = \dfrac{du}{u}$

$d(e^u) = e^u du$

$d(a^n) = a^n\ ln\ a\ du$

$d(sen\ u) = cos\ u\ du$

$d(cos\ u) = -sen\ u\ du$

$d(tan\ u) = sec^2 udu$

$d(cot\ u) = -csc^2 udu$

$d(\sec u) = \sec u\ tan\ udu$

$d(\csc u) = -\csc u \cot udu$

$d(arcsen\ u) = \dfrac{du}{\sqrt{1-u^2}}$

$d(arccos\ u) = \dfrac{-du}{\sqrt{1-u^2}}$

$d(arctan\ u) = \dfrac{du}{1+u^2}$

$d(arccot\ u) = \dfrac{-du}{1+u^2}$

$d(arcsec\ u) = \dfrac{du}{u\sqrt{u^2-1}}$

$d(arccsc\ u) = \dfrac{-du}{u\sqrt{u^2-1}}$

INTEGRALES

$\int du = u + c$

$\int adu = a\int du$

$\int (du + dv) = \int du + \int dv$

$\int u^n du = \dfrac{u^{n+1}}{n+1} + c\ (n, \neq -1)$

$\int \dfrac{du}{u} = \ln|u| + c$

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

$\int a^u du = \dfrac{a^u}{\ln a} + c$

$\int \cos udu = sen\ u + c$

$\int sen\ udu = -\cos u + c$

$\int sec^2 udu = \tan u + c$

$\int csc^2 udu = -\cot u + c$

$\int \sec u \tan u\ du = sec\ u + c$

$\int \csc u \cot u\ du = -\csc u + c$

$\int \dfrac{du}{\sqrt{1-u^2}} = arc\ sen\ u + c$

$\int \dfrac{du}{\sqrt{1-u^2}} = -arc\cos u + c$

$\int \dfrac{du}{1+u^2} = arc\tan u + c$

$\int \dfrac{du}{1+u^2} = -arc\cot u + c$

$$\int \frac{du}{u\sqrt{u^2-1}} = \begin{cases} arc\sec u + c; u > 0 \\ -arc\sec u + c; u < 0 \end{cases}$$

$$\int \frac{-du}{u\sqrt{u^2-1}} = \begin{cases} -arc\csc u + c; u > 0 \\ arc\csc u + c; u < 0 \end{cases}$$

OTRAS INTEGRALES INMEDIATAS

$\int \tan u\, du = \begin{cases} \ln|\sec u| + c \\ -\ln|\cos u| + c \end{cases}$

$\int \cot u du = \ln|sen\, u| + c$

$\int \sec u\, du = \begin{cases} \ln|\sec u + \tan u| + c \\ \ln\left|\tan u\left(\frac{u}{2} + \frac{\pi}{4}\right)\right| + c \end{cases}$

$\int \csc u du = \ln|\csc u - \cot u| + c$

$\int sen\, hudu = \cos hu + c$

$\int \cos hu\, du = sen\, hu + c$

$\int tan\, hudu = \ln|\cos hu| + c$

$\int \cot hu\, du = sen\, hu + c$

$\int sec\, hudu = \arctan h(sen\, hu) + c$

$\int \csc hu\, du = -arc \cot h\,(\cos hu) + c$

$\int \frac{du}{\sqrt{a^2 - u^2}} = \begin{cases} arc\ sen\ \frac{u}{a} + c \\ -arc\ sen\ \frac{u}{a} + c \end{cases}$

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

$\int \frac{du}{u^2 + a^2} = \begin{cases} \frac{1}{a} arc \tan \frac{u}{a} + c \\ \frac{1}{a} arc\ cot \frac{u}{a} + c \end{cases}$

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

$\int \frac{du}{u\sqrt{a^2 \pm u^2}} = \frac{1}{a} \ln\left|\frac{u}{a + \sqrt{a^2 \pm u^2}}\right| + c$

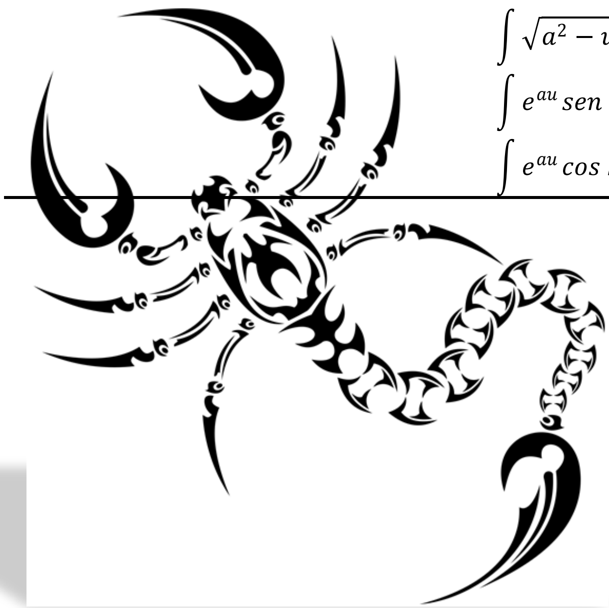
$\int \frac{du}{u\sqrt{u^2 - a^2}} = \begin{cases} \frac{1}{a} arc \cos \frac{u}{a} + c \\ \frac{1}{a} arc\ sen\ \frac{u}{a} + c \end{cases}$

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

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

$\int e^{au} sen\ budu = \frac{e^{au}(a\ sen\ bu - b \cos bu)}{a^2 + b^2} + c$

$\int e^{au} cos\ budu = \frac{e^{au}(a\ cos\ bu + bsen\ bu)}{a^2 + b^2} + c$



ALGUNAS PROPIEDADES

$sinh\, x = \frac{e^x - e^{-x}}{2}$

$cosh\, x = \frac{e^x + e^{-x}}{2}$

$sen^n x = (sen\, x)^n$

$ln^n x = (\ln x)^n$

$log^n x = (\log x)^n$

$\log x = \log|x|$

$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$

$a^{m/n} = \sqrt[n]{a^m} = \left(\sqrt[n]{a}\right)^m$

SEAN a, b, c: bases; m, n NÚMEROS NATURALES

$(a \pm b)^2 = a^2 \pm 2ab + b^2$

$(a \pm b)^4 = a^4 \pm 4a^3b + 6a^2b^2 \pm 4ab^3 + b^4$

$a^{2n} - b^{2n} = (a^n + b^n)(a^n - b^n)$

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + ac + bc)$

$(a \pm b)^3 = a^3 \pm 3a^2b + 3ab^2 + b^3$

$a^3 \pm b^3 = (a \pm b)(a^2 \mp ab \pm b^2)$

LOGARITMOS Y EXPONENCIALES

$\log(xyz) = log_b x + log_b y + log_b z$

$log_b x^n = n\, log_b x$

$log_b 1 = 0$

$\ln e = 1$

$\ln e^x = x$

$e\,(\ln x) = x$

$log_b\left(\frac{x}{y}\right) = log_b x - log_b y$

$log_b b = 1$

$\ln e\, x = x$

$e^{\ln x} = x$

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