

FÓRMULAS DE DERIVADAS

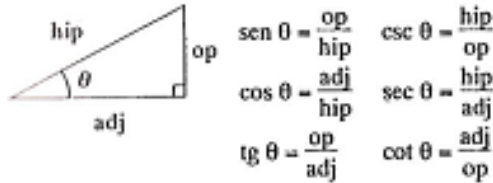
- 1 $D_x c = 0$
- 2 $D_x (u + v) = D_x u + D_x v$
- 3 $D_x (uv) = u D_x v + v D_x u$
- 4 $D_x \left(\frac{u}{v} \right) = \frac{v D_x u - u D_x v}{v^2}$
- 5 $D_x f(g(x)) = f'(g(x))g'(x)$
- 6 $D_x u^n = n u^{n-1} D_x u$
- 7 $D_x e^u = e^u D_x u$
- 8 $D_x a^u = a^u \ln a D_x u$
- 9 $D_x \ln |u| = \frac{1}{u} D_x u$
- 10 $D_x \log_a |u| = \frac{1}{u \ln a} D_x u$
- 11 $D_x \operatorname{sen} u = \cos u D_x u$
- 12 $D_x \operatorname{cos} u = -\operatorname{sen} u D_x u$
- 13 $D_x \operatorname{tg} u = \sec^2 u D_x u$
- 14 $D_x \operatorname{cot} u = -\operatorname{csc}^2 u D_x u$
- 15 $D_x \operatorname{sec} u = \sec u \operatorname{tg} u D_x u$
- 16 $D_x \operatorname{csc} u = -\operatorname{csc} u \operatorname{cot} u D_x u$
- 17 $D_x \operatorname{sen}^{-1} u = \frac{1}{\sqrt{1-u^2}} D_x u$
- 18 $D_x \operatorname{cos}^{-1} u = \frac{-1}{\sqrt{1-u^2}} D_x u$
- 19 $D_x \operatorname{tg}^{-1} u = \frac{1}{1+u^2} D_x u$
- 20 $D_x \operatorname{sec}^{-1} u = \frac{1}{u \sqrt{u^2-1}} D_x u$

FÓRMULAS DE INTEGRAIS

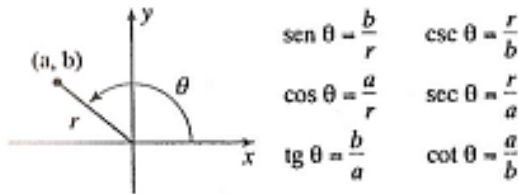
- 1 $\int u dv = uv - \int v du$
- 2 $\int u^n du = \frac{1}{n+1} u^{n+1} + C, n \neq -1$
- 3 $\int \frac{1}{u} du = \ln |u| + C$
- 4 $\int e^u du = e^u + C$
- 5 $\int a^u du = \frac{1}{\ln a} a^u + C$
- 6 $\int \operatorname{sen} u du = -\operatorname{cos} u + C$
- 7 $\int \operatorname{cos} u du = \operatorname{sen} u + C$
- 8 $\int \sec^2 u du = \operatorname{tg} u + C$
- 9 $\int \operatorname{csc}^2 u du = -\operatorname{cot} u + C$
- 10 $\int \sec u \operatorname{tg} u du = \sec u + C$
- 11 $\int \operatorname{csc} u \operatorname{cot} u du = -\operatorname{csc} u + C$
- 12 $\int \operatorname{tg} u du = -\ln |\operatorname{cos} u| + C$
- 13 $\int \operatorname{cot} u du = \ln |\operatorname{sen} u| + C$
- 14 $\int \sec u du = \ln |\sec u + \operatorname{tg} u| + C$
- 15 $\int \operatorname{csc} u du = \ln |\operatorname{csc} u - \operatorname{cot} u| + C$
- 16 $\int \frac{1}{\sqrt{a^2-u^2}} du = \operatorname{sen}^{-1} \frac{u}{a} + C$
- 17 $\int \frac{1}{a^2+u^2} du = \frac{1}{a} \operatorname{tg}^{-1} \frac{u}{a} + C$
- 18 $\int \frac{1}{u \sqrt{u^2-a^2}} du = \frac{1}{a} \operatorname{sec}^{-1} \frac{u}{a} + C$
- 19 $\int \frac{1}{a^2-u^2} du = \frac{1}{2a} \ln \left| \frac{u+a}{u-a} \right| + C$
- 20 $\int \frac{1}{\sqrt{u^2-a^2}} du = \ln |u + \sqrt{u^2-a^2}| + C$

TRIGONOMETRIA

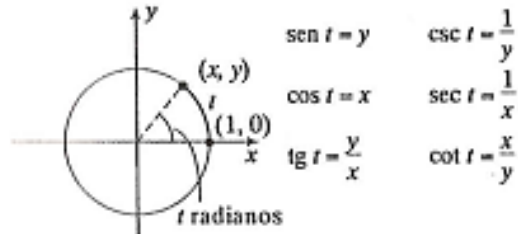
FUNÇÕES TRIGONOMÉTRICAS DE ÂNGULOS AGUDOS



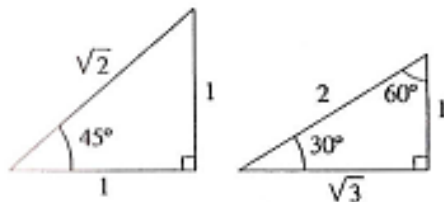
DE ÂNGULOS ARBITRÁRIOS



DE NÚMEROS REAIS



TRIÂNGULOS ESPECIAIS



IDENTIDADES TRIGONOMÉTRICAS

$\text{csc } t = \frac{1}{\text{sen } t}$ $\text{tg } t = \frac{\text{sen } t}{\text{cos } t}$
 $\text{sec } t = \frac{1}{\text{cos } t}$ $\text{cot } t = \frac{\text{cos } t}{\text{sen } t}$
 $\text{cot } t = \frac{1}{\text{tg } t}$
 $\text{sen}^2 t + \text{cos}^2 t = 1$ $\text{sen}(-t) = -\text{sen } t$
 $1 + \text{tg}^2 t = \text{sec}^2 t$ $\text{cos}(-t) = \text{cos } t$
 $1 + \text{cot}^2 t = \text{csc}^2 t$ $\text{tg}(-t) = -\text{tg } t$
 $\text{sen}(u + v) = \text{sen } u \text{cos } v + \text{cos } u \text{sen } v$

$$\text{cos}(u + v) = \text{cos } u \text{cos } v - \text{sen } u \text{sen } v$$

$$\text{tg}(u + v) = \frac{\text{tg } u + \text{tg } v}{1 - \text{tg } u \text{tg } v}$$

$$\text{sen}(u - v) = \text{sen } u \text{cos } v - \text{cos } u \text{sen } v$$

$$\text{cos}(u - v) = \text{cos } u \text{cos } v + \text{sen } u \text{sen } v$$

$$\text{tg}(u - v) = \frac{\text{tg } u - \text{tg } v}{1 + \text{tg } u \text{tg } v}$$

$$\text{sen } 2u = 2 \text{sen } u \text{cos } u$$

$$\text{cos } 2u = \text{cos}^2 u - \text{sen}^2 u = 1 - 2 \text{sen}^2 u = 2 \text{cos}^2 u - 1$$

$$\text{tg } 2u = \frac{2 \text{tg } u}{1 - \text{tg}^2 u}$$

$$\left| \text{sen } \frac{u}{2} \right| = \sqrt{\frac{1 - \text{cos } u}{2}} \quad \left| \text{cos } \frac{u}{2} \right| = \sqrt{\frac{1 + \text{cos } u}{2}}$$

$$\text{tg } \frac{u}{2} = \frac{1 - \text{cos } u}{\text{sen } u} = \frac{\text{sen } u}{1 + \text{cos } u}$$

$$\text{sen}^2 u = \frac{1 - \text{cos } 2u}{2} \quad \text{cos}^2 u = \frac{1 + \text{cos } 2u}{2}$$

$$\text{sen } u \text{cos } v = \frac{1}{2} [\text{sen}(u + v) + \text{sen}(u - v)]$$

$$\text{cos } u \text{sen } v = \frac{1}{2} [\text{sen}(u + v) - \text{sen}(u - v)]$$

$$\text{cos } u \text{cos } v = \frac{1}{2} [\text{cos}(u + v) + \text{cos}(u - v)]$$

$$\text{sen } u \text{sen } v = \frac{1}{2} [\text{cos}(u - v) - \text{cos}(u + v)]$$

VALORES ESPECIAIS DE FUNÇÕES TRIGONOMÉTRICAS

θ (graus)	θ (radianos)	sen θ	cos θ	tg θ	cot θ	sec θ	csc θ
0°	0	0	1	0	-	1	-
30°	$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$	$\frac{2\sqrt{3}}{3}$	2
45°	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1	1	$\sqrt{2}$	$\sqrt{2}$
60°	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{\sqrt{3}}{3}$	2	$\frac{2\sqrt{3}}{3}$
90°	$\frac{\pi}{2}$	1	0	-	0	-	1