

TABELA

Identidades Trigonométricas, Derivadas e Integrais

Identidades Trigonométricas

1. $\sin^2 x + \cos^2 x = 1.$
2. $1 + \operatorname{tg}^2 x = \sec^2 x.$
3. $1 + \operatorname{cotg}^2 x = \operatorname{cosec}^2 x.$
4. $\sin^2 x = \frac{1 - \cos 2x}{2}.$
5. $\cos^2 x = \frac{1 + \cos 2x}{2}.$
6. $\sin 2x = 2 \sin x \cos x.$
7. $2 \sin x \cos y = \sin(x - y) + \sin(x + y).$
8. $2 \sin x \sin y = \cos(x - y) - \cos(x + y).$
9. $2 \cos x \cos y = \cos(x - y) + \cos(x + y).$
10. $1 \pm \sin x = 1 \pm \cos\left(\frac{\pi}{2} - x\right).$

Derivadas

Sejam u e v funções deriváveis de x e n constante.

1. $y = u^n \Rightarrow y' = nu^{n-1}u'.$
2. $y = uv \Rightarrow y' = u'v + v'u.$
3. $y = \frac{u}{v} \Rightarrow y' = \frac{u'v - v'u}{v^2}.$
4. $y = a^u \Rightarrow y' = a^u(\ln a)u', \quad (a > 0, a \neq 1).$
5. $y = e^u \Rightarrow y' = e^u u'.$
6. $y = \log_a u \Rightarrow y' = \frac{u'}{u} \log_a e.$
7. $y = \ln u \Rightarrow y' = \frac{1}{u} u'.$
8. $y = u^v \Rightarrow y' = v u^{v-1} u' + u^v (\ln u) v'.$
9. $y = \operatorname{sen} u \Rightarrow y' = u' \cos u.$
10. $y = \cos u \Rightarrow y' = -u' \operatorname{sen} u.$
11. $y = \operatorname{tg} u \Rightarrow y' = u' \sec^2 u.$
12. $y = \operatorname{cotg} u \Rightarrow y' = -u' \operatorname{cosec}^2 u.$
13. $y = \sec u \Rightarrow y' = u' \sec u \operatorname{tg} u.$
14. $y = \operatorname{cosec} u \Rightarrow y' = -u' \operatorname{cosec} u \operatorname{cotg} u.$
15. $y = \operatorname{arc} \operatorname{sen} u \Rightarrow y' = \frac{u'}{\sqrt{1-u^2}}.$
16. $y = \operatorname{arc} \cos u \Rightarrow y' = \frac{-u'}{\sqrt{1-u^2}}.$
17. $y = \operatorname{arc} \operatorname{tg} u \Rightarrow y' = \frac{u'}{1+u^2}.$
18. $y = \operatorname{arc} \operatorname{cotg} u \Rightarrow y' = \frac{-u'}{1+u^2}.$
19. $y = \operatorname{arc} \sec u, |u| \geq 1 \Rightarrow y' = \frac{u'}{|u|\sqrt{u^2-1}}, |u| > 1.$
20. $y = \operatorname{arc} \operatorname{cosec} u, |u| \geq 1 \Rightarrow y' = \frac{-u'}{|u|\sqrt{u^2-1}}, |u| > 1.$

Integrais

1. $\int du = u + c.$
2. $\int u^n du = \frac{u^{n+1}}{n+1} + c, \quad n \neq -1.$
3. $\int \frac{du}{u} = \ln|u| + c.$
4. $\int a^u du = \frac{a^u}{\ln a} + c, \quad a > 0, a \neq 1.$
5. $\int e^u du = e^u + c.$
6. $\int \operatorname{sen} u \, du = -\cos u + c.$
7. $\int \cos u \, du = \operatorname{sen} u + c.$
8. $\int \operatorname{tg} u \, du = \ln|\sec u| + c.$
9. $\int \operatorname{cotg} u \, du = \ln|\operatorname{sen} u| + c.$
10. $\int \sec u \, du = \ln|\sec u + \operatorname{tg} u| + c.$
11. $\int \operatorname{cosec} u \, du = \ln|\operatorname{cosec} u - \operatorname{cotg} u| + c.$
12. $\int \sec u \operatorname{tg} u \, du = \sec u + c.$
13. $\int \operatorname{cosec} u \operatorname{cotg} u \, du = -\operatorname{cosec} u + c.$
14. $\int \sec^2 u \, du = \operatorname{tg} u + c.$
15. $\int \operatorname{cosec}^2 u \, du = -\operatorname{cotg} u + c.$
16. $\int \frac{du}{u^2 + a^2} = \frac{1}{a} \operatorname{arc} \operatorname{tg} \frac{u}{a} + c.$
17. $\int \frac{du}{u^2 - a^2} = \frac{1}{2a} \ln \left| \frac{u-a}{u+a} \right| + c, \quad u^2 > a^2.$
18. $\int \frac{du}{\sqrt{u^2 + a^2}} = \ln \left| u + \sqrt{u^2 + a^2} \right| + c.$
19. $\int \frac{du}{u\sqrt{u^2 - a^2}} = \frac{1}{a} \operatorname{arc} \sec \left| \frac{u}{a} \right| + c.$
20. $\int \frac{du}{\sqrt{u^2 - a^2}} = \ln \left| u + \sqrt{u^2 - a^2} \right| + c.$
21. $\int \frac{du}{\sqrt{a^2 - u^2}} = \operatorname{arc} \operatorname{sen} \frac{u}{a} + c, \quad u^2 < a^2.$