

### TABELAS TRIGONOMÉTRICA E DE DERIVADAS

1.  $\cos(\alpha + \beta) = \cos\alpha\cos\beta - \text{sen}\alpha\text{sen}\beta$
2.  $\text{sen}(\alpha + \beta) = \text{sen}\alpha\cos\beta + \text{sen}\beta\cos\alpha$
3.  $\text{tg}(\alpha + \beta) = \frac{\text{tg}\alpha + \text{tg}\beta}{1 - \text{tg}\alpha\text{tg}\beta}$
4.  $\sec^2\theta = 1 + \text{tg}^2\theta$
5.  $\text{cosec}^2\theta = 1 + \text{cotg}^2\theta$
6.  $\cos 2\theta = \cos^2\theta - \text{sen}^2\theta$
7.  $\text{sen} 2\theta = 2\text{sen}\theta\cos\theta$
8.  $\cos^2\theta = \frac{1}{2} + \frac{1}{2}\cos 2\theta$
9.  $\text{sen}^2\theta = \frac{1}{2} - \frac{1}{2}\cos 2\theta$
10.  $\text{sen}\theta = \frac{2\text{tg}\frac{\theta}{2}}{1 + \text{tg}^2\frac{\theta}{2}}$ , se  $\cos\frac{\theta}{2} \neq 0$
11.  $\cos\theta = \frac{1 - \text{tg}^2\frac{\theta}{2}}{1 + \text{tg}^2\frac{\theta}{2}}$ , se  $\cos\frac{\theta}{2} \neq 0$
12. Fórmulas de prostaferese ( transformam produto em adição ou subtração):
  - (a)  $\text{sen}\alpha\cos\beta = \frac{1}{2}[\text{sen}(\alpha + \beta) + \text{sen}(\alpha - \beta)]$
  - (b)  $\cos\alpha\cos\beta = \frac{1}{2}[\cos(\alpha + \beta) + \cos(\alpha - \beta)]$
  - (c)  $\text{sen}\alpha\text{sen}\beta = \frac{1}{2}[\cos(\alpha - \beta) - \cos(\alpha + \beta)]$
13.  $\text{sen}p - \text{sen}q = 2\text{sen}\left(\frac{p-q}{2}\right)\cos\left(\frac{p+q}{2}\right)$
14.  $\text{cosp} - \text{cos}q = -2\text{sen}\left(\frac{p+q}{2}\right)\text{sen}\left(\frac{p-q}{2}\right)$
15.  $\cos^2\theta = \frac{1}{2}\left(1 + \frac{\text{cotg } 2\theta}{\sqrt{1 + \text{cotg}^2 2\theta}}\right)$ .

## TABELA DE DERIVADAS

1.  $f(x) = x^n \implies f'(x) = nx^{n-1}, \forall x \in \mathbb{R}, \forall n \in \mathbb{N}$
2.  $f(x) = x^\alpha \implies f'(x) = \alpha x^{\alpha-1}, \forall x > 0, \forall \alpha \in \mathbb{R}$
3.  $\sin' x = \cos x$
4.  $\cos' x = -\text{sen } x$
5.  $\tan' x = \sec^2 x$
6.  $\sec' x = \sec x \text{ tg } x$
7.  $\cotg' x = -\text{cossec}^2 x$
8.  $\text{cossec}' x = -\text{cossec } x \cot x$
9.  $f(x) = e^x \implies f'(x) = e^x$
10.  $\ln' x = \frac{1}{x}, \forall x > 0$
11.  $\arctan' x = \frac{1}{1+x^2}$
12.  $\arcsen' x = \frac{1}{\sqrt{1-x^2}}, x \in (-1, +1)$
13.  $\sinh' x = \cosh x$
14.  $\cosh' x = \sinh x$ .

## Regras de Derivação

1.  $(f + g)' = f' + g'$
2.  $(cf)' = cf'$ , se  $c$  é uma constante
3.  $(fg)' = f'g + fg'$
4.  $\left(\frac{f}{g}\right)' = \frac{f'g - fg'}{g^2}$
5.  $(f \circ g)'(p) = f'(g(p)) \cdot g'(p)$  (Regra da Cadeia).

## Fórmulas Úteis de Derivação

1.  $[e^{f(x)}]' = e^{f(x)} f'(x)$
2.  $[\ln f(x)]' = \frac{f'(x)}{f(x)}$
3.  $[f(x)^\alpha]' = \alpha f(x)^{\alpha-1} f'(x)$
5.  $[a^x]' = a^x \ln a, a > 0 \text{ e } a \neq 1$
4.  $[f(x)^{g(x)}]' = f(x)^{g(x)} [g(x) \ln f(x)]'$ .