FORMULÁRIO

Considerando que u é uma função real de variável real x e que $a,\ \alpha, \beta \in \mathbb{R}$,

$$\frac{d}{dx}u^\alpha = \alpha u^{\alpha-1}\frac{du}{dx}\ (\alpha \neq 0) \qquad \frac{d}{dx}\log_a u = \frac{\log_a e}{u}\frac{du}{dx} \qquad \frac{d}{dx}\left(\frac{a^u}{\ln a}\right) = a^u\frac{du}{dx}$$

$$\frac{d}{dx}e^u = e^u\frac{du}{dx} \qquad \frac{d}{dx}u^v = \frac{d}{dx}e^{v\ln u} = e^{v\ln u}\frac{d}{dx}(v\ln u) \qquad \frac{d}{dx}\cos u = -\operatorname{sen} u\frac{du}{dx}$$

$$\frac{d}{dx}\operatorname{sen} u = \cos u\frac{du}{dx} \qquad \frac{d}{dx}\operatorname{tg} u = \sec^2 u\frac{du}{dx} \qquad \frac{d}{dx}\operatorname{cotg} u = -\operatorname{cosec}^2 u\frac{du}{dx}$$

$$\frac{d}{dx}\sec u = \sec u\operatorname{tg} u\frac{du}{dx} \qquad \frac{d}{dx}\operatorname{cosec} u = -\operatorname{cosec} u\operatorname{cotg} u\frac{du}{dx} \qquad \frac{d}{dx}(\arccos u) = -\frac{1}{\sqrt{1-u^2}}\frac{du}{dx}$$

$$\frac{d}{dx}(\operatorname{arcsen} u) = \frac{1}{\sqrt{1-u^2}}\frac{du}{dx} \qquad \frac{d}{dx}(\operatorname{arctg} u) = \frac{1}{1+u^2}\frac{du}{dx} \qquad \frac{d}{dx}(\operatorname{arccotg} u) = -\frac{1}{1+u^2}\frac{du}{dx}$$

$$\frac{d}{dx}(\operatorname{arcsec} u) = \frac{1}{|u|\sqrt{u^2-1}}\frac{du}{dx} \qquad \frac{d}{dx}(\operatorname{arccosec} u) = -\frac{1}{|u|\sqrt{u^2-1}}\frac{du}{dx} \qquad \frac{d}{dx}\operatorname{ch} u = \operatorname{sh} u\frac{du}{dx}$$

$$\frac{d}{dx}\operatorname{sh} u = \operatorname{ch} u\frac{du}{dx} \qquad \frac{d}{dx}\operatorname{th} u = \operatorname{sech}^2 u\frac{du}{dx}$$

Algumas fórmulas trignométricas:

$$\sec\alpha = \frac{1}{\cos\alpha} \qquad \cos(\alpha\pm\beta) = \cos\alpha\cos\beta \mp \operatorname{sen}\alpha\operatorname{sen}\beta \qquad \cos\frac{\alpha}{2} = \pm\sqrt{\frac{1+\cos\alpha}{2}}$$

$$\operatorname{cosec}\alpha = \frac{1}{\operatorname{sen}\alpha} \qquad \operatorname{sen}(\alpha\pm\beta) = \operatorname{sen}\alpha\cos\beta \pm \operatorname{sen}\beta\cos\alpha \qquad \operatorname{sen}\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{2}}$$

$$\cos^2\alpha + \operatorname{sen}^2\alpha = 1 \qquad \operatorname{tg}(\alpha\pm\beta) = \frac{\operatorname{tg}\alpha \pm \operatorname{tg}\beta}{1 \mp \operatorname{tg}\alpha\operatorname{tg}\beta} \qquad \operatorname{tg}\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}} = \frac{1-\cos\alpha}{\operatorname{sen}\alpha}$$

Algumas fórmulas relevantes

$$\operatorname{ch} u = \frac{e^u + e^{-u}}{2}$$

$$\operatorname{sh} u = \frac{e^u - e^{-u}}{2} \qquad \operatorname{ch}\frac{u}{2} = \pm\sqrt{\frac{\operatorname{ch} u + 1}{2}} \qquad \operatorname{ch}(u\pm v) = \operatorname{ch} u\operatorname{ch} v \pm \operatorname{sh} u\operatorname{sh} v$$

$$\operatorname{th} u = \frac{\operatorname{sh} u}{\operatorname{ch} u} \qquad \coth u = \frac{1}{\operatorname{th} u} \qquad \operatorname{sh}\frac{u}{2} = \pm\sqrt{\frac{\operatorname{ch} u - 1}{2}} \qquad \operatorname{sh}(u\pm v) = \operatorname{sh} u\operatorname{ch} v \pm \operatorname{sh} v\operatorname{ch} u$$

$$\operatorname{ch}^2 u - \operatorname{sh}^2 u = 1 \qquad \operatorname{th}\frac{u}{2} = \pm\sqrt{\frac{\operatorname{ch} u - 1}{\operatorname{ch} u + 1}} = \frac{\operatorname{sh} u}{\operatorname{ch} u + 1} \qquad \operatorname{th}(u\pm v) = \frac{\operatorname{th} u \pm \operatorname{th} v}{1 \pm \operatorname{th} u\operatorname{th} v}$$