Formulário

$u = u(x)$, $v = v(x)$, $m \in \mathbb{R}\backslash\{0\}$, $n \in \mathbb{R}\backslash\{-1\}$, $a \in \mathbb{R}^+\backslash\{1\}$

Derivadas

$(u \cdot v)' = u' \cdot v + u \cdot v'$

$\left(\frac{u}{v}\right)' = \frac{u' \cdot v - u \cdot v'}{v^2}$

$(u^m)' = m \cdot u^{m-1} \cdot u'$

$(a^u)' = a^u \cdot \ln(a) \cdot u'$

$(e^u)' = e^u \cdot u'$

$(u^v)' = v \cdot u^{v-1} \cdot u' + u^v \cdot \ln(u) \cdot v'$

$(\log_a(u))' = \frac{1}{\ln(a)} \cdot \frac{1}{u} \cdot u'$

$(\ln(u))' = \frac{1}{u} \cdot u'$

$(\operatorname{sen}(u))' = \cos(u) \cdot u'$

$(\cos(u))' = -\operatorname{sen}(u) \cdot u'$

$(\operatorname{tg}(u))' = \sec^2(u) \cdot u'$

$(\operatorname{cotg}(u))' = -\operatorname{cosec}^2(u) \cdot u'$

$(\sec(u))' = \sec(u) \cdot \operatorname{tg}(u) \cdot u'$

$(\operatorname{cosec}(u))' = -\operatorname{cosec}(u) \cdot \operatorname{cotg}(u) \cdot u'$

$(\operatorname{arcsen}(u))' = \frac{1}{\sqrt{1-u^2}} \cdot u'$

$(\arccos(u))' = -\frac{1}{\sqrt{1-u^2}} \cdot u'$

$(\operatorname{arctg}(u))' = \frac{1}{1+u^2} \cdot u'$

$(\operatorname{arccotg}(u))' = -\frac{1}{1+u^2} \cdot u'$

Integrais

$\int u' \cdot v \, dx = u \cdot v - \int u \cdot v' \, dx$

$\int u^n \cdot u' \, dx = \frac{1}{n+1} \, u^{n+1} + C$

$\int a^u \cdot u' \, dx = \frac{1}{\ln(a)} \, a^u + C$

$\int e^u \cdot u' \, dx = e^u + C$

$\int \frac{1}{u} \cdot u' \, dx = \ln|u| + C$

$\int \cos(u) \cdot u' \, dx = \operatorname{sen}(u) + C$

$\int \operatorname{sen}(u) \cdot u' \, dx = -\cos(u) + C$

$\int \sec^2(u) \cdot u' \, dx = \operatorname{tg}(u) + C$

$\int \operatorname{cosec}^2(u) \cdot u' \, dx = -\operatorname{cotg}(u) + C$

$\int \sec(u) \cdot \operatorname{tg}(u) \cdot u' \, dx = \sec(u) + C$

$\int \operatorname{cosec}(u) \cdot \operatorname{cotg}(u) \cdot u' \, dx = -\operatorname{cosec}(u) + C$

$\int \frac{1}{\sqrt{1-u^2}} \cdot u' \, dx = \operatorname{arcsen}(u) + C$

$\int \frac{1}{1+u^2} \cdot u' \, dx = \operatorname{arctg}(u) + C$

$\int \sec(u) \cdot u' \, dx = \ln|\sec(u) + \operatorname{tg}(u)| + C$

$\int \operatorname{cosec}(u) \cdot u' \, dx = \ln|\operatorname{cosec}(u) - \operatorname{cotg}(u)| + C$

Substituições Trigonométricas

$$\int f\left(x, \sqrt{a^2 - u^2}\right)\, dx, \qquad \text{com } u = a\,\text{sen}(t)$$

$$\int f\left(x, \sqrt{a^2 + u^2}\right)\, dx, \qquad \text{com } u = a\,\text{tg}(t)$$

$$\int f\left(x, \sqrt{u^2 - a^2}\right)\, dx, \qquad \text{com } u = a\sec(t)$$

Integração por Partes

Sejam $u = u(x)$ e $v = v(x)$

$$\int u' \cdot v\, dx = u \cdot v - \int u \cdot v'\, dx$$

Propriedades do Logaritmo

$\log_a(u \cdot v) = \log_a(u) + \log_a(v)$

$\log_a\left(\frac{u}{v}\right) = \log_a(u) - \log_a(v)$

$\log_a(u^v) = v \log_a(u)$

Fórmulas Trigonométricas

$\text{sen}^2(\alpha) + \cos^2(\alpha) = 1$ $\quad$ $\text{tg}^2(\alpha) + 1 = \sec^2(\alpha)$ $\quad$ $1 + \text{cotg}^2(\alpha) = \text{cosec}^2(\alpha)$

$\text{sen}^2(\alpha) = \frac{1}{2}(1 - \cos(2\alpha))$ $\quad$ $\cos^2(\alpha) = \frac{1}{2}(1 + \cos(2\alpha))$

$\text{sen}(2\alpha) = 2\,\text{sen}(\alpha)\cos(\alpha)$ $\quad$ $\cos(2\alpha) = \cos^2(\alpha) - \text{sen}^2(\alpha)$

$\text{sen}(\alpha \pm \beta) = \text{sen}(\alpha)\cos(\beta) \pm \cos(\alpha)\,\text{sen}(\beta)$ $\quad$ $\cos(\alpha \pm \beta) = \cos(\alpha)\cos(\beta) \mp \text{sen}(\alpha)\,\text{sen}(\beta)$