

Tabela de Derivadas

$$1) y = u + v \Rightarrow y' = u' + v'$$

$$2) y = u \cdot v \Rightarrow y' = u' \cdot v + u \cdot v'$$

$$3) y = \frac{u}{v} \Rightarrow y' = \frac{u' \cdot v - u \cdot v'}{v^2}, \text{ com } v \neq 0$$

$$4) y = a \cdot u \Rightarrow y' = a \cdot u'$$

$$5) y = u^n \ (n \neq 0) \Rightarrow y' = n \cdot u^{n-1} \cdot u'$$

$$6) y = a^u \ (a > 0, a \neq 1) \Rightarrow y' = a^u \cdot \ln a \cdot u'$$

$$7) y = e^u \Rightarrow y' = e^u \cdot u'$$

$$8) y = \log_a u \ (a > 0, a \neq 1) \Rightarrow y' = \frac{u'}{u} \cdot \log_a e$$

$$9) y = \ln u \Rightarrow y' = \frac{u'}{u}$$

$$10) y = u^v \ (u > 0) \Rightarrow y' = v \cdot u^{v-1} \cdot u' + u^v \cdot \ln u \cdot v'$$

$$11) y = \sin u \Rightarrow y' = \cos u \cdot u'$$

$$12) y = \cos u \Rightarrow y' = -\sin u \cdot u'$$

$$13) y = \operatorname{tg} u \Rightarrow y' = \sec^2 u \cdot u'$$

$$14) y = \operatorname{cot} u \Rightarrow y' = -\operatorname{cosec}^2 u \cdot u'$$

$$15) y = \sec u \Rightarrow y' = \sec u \cdot \operatorname{tg} u \cdot u'$$

$$16) y = \operatorname{cosec} u \Rightarrow y' = -\operatorname{cosec} u \cdot \operatorname{cot} u \cdot u'$$

$$17) y = \operatorname{arcsen} u \Rightarrow y' = \frac{u'}{\sqrt{1-u^2}}$$

$$18) y = \operatorname{arccos} u \Rightarrow y' = \frac{-u'}{\sqrt{1-u^2}}$$

$$19) y = \operatorname{arctg} u \Rightarrow y' = \frac{u'}{1+u^2}$$

$$20) y = \operatorname{arc} \operatorname{cot} u \Rightarrow y' = \frac{-u'}{1+u^2}$$

$$21) y = \operatorname{arc} \operatorname{sec} u, |u| \geq 1 \Rightarrow y' = \frac{u'}{|u|\sqrt{u^2-1}}, |u| > 1$$

$$22) y = \operatorname{arccos} u, |u| \geq 1 \Rightarrow y' = \frac{-u'}{|u|\sqrt{u^2-1}}, |u| > 1$$

$$23) y = \operatorname{sen} u \Rightarrow y' = \operatorname{cosh} u \cdot u'$$

$$24) y = \operatorname{cosh} u \Rightarrow y' = \operatorname{sen} u \cdot u'$$

$$25) y = \operatorname{tgh} u \Rightarrow y' = \operatorname{sech}^2 u \cdot u'$$

$$26) y = \operatorname{cot} u \Rightarrow y' = -\operatorname{cosec}^2 u \cdot u'$$

$$27) y = \operatorname{sec} u \Rightarrow y' = \operatorname{sec} u \cdot \operatorname{tg} u \cdot u'$$

$$28) y = \operatorname{cosec} u \Rightarrow y' = -\operatorname{cosec} u \cdot \operatorname{cot} u \cdot u'$$

$$29) y = \operatorname{arg} \operatorname{sen} u \Rightarrow y' = \frac{u'}{\sqrt{u^2+1}}$$

$$30) y = \operatorname{arg} \operatorname{cosh} u \Rightarrow y' = \frac{u'}{\sqrt{u^2-1}}, u > 1$$

$$31) y = \operatorname{arg} \operatorname{tgh} u \Rightarrow y' = \frac{u'}{1-u^2}, |u| < 1$$

$$32) y = \operatorname{arg} \operatorname{cot} u \Rightarrow y' = \frac{u'}{1-u^2}, |u| > 1$$

$$33) y = \operatorname{arg} \operatorname{sec} u \Rightarrow y' = \frac{-u'}{u\sqrt{1-u^2}}, 0 < u < 1$$

$$34) y = \operatorname{arg} \operatorname{cosec} u \Rightarrow y' = \frac{-u'}{|u|\sqrt{1+u^2}}, u \neq 0$$

$$35) f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

Tabela de Integrais

- 1) $\int du = u + c$
- 2) $\int \frac{du}{u} = \ln|u| + c$
- 3) $\int u^n du = \frac{u^{n+1}}{n+1} + c$, (n é uma constante $\neq -1$)
- 4) $\int a^u du = \frac{a^u}{\ln a} + c$
- 5) $\int e^u du = e^u + c$
- 6) $\int \operatorname{sen} u du = -\operatorname{cos} u + c$
- 7) $\int \operatorname{cos} u du = \operatorname{sen} u + c$
- 8) $\int \operatorname{tg} u du = -\ln|\operatorname{cos} u| + c = \ln|\operatorname{sec} u| + c$
- 9) $\int \operatorname{cotg} u du = \ln|\operatorname{sen} u| + c$
- 10) $\int \operatorname{cosec} u du = \ln|\operatorname{cosec} u - \operatorname{cotg} u| + c$
- 11) $\int \operatorname{sec} u du = \ln|\operatorname{sec} u + \operatorname{tg} u| + c$
- 12) $\int \operatorname{sec}^2 u du = \operatorname{tg} u + c$
- 13) $\int \operatorname{cosec}^2 u du = -\operatorname{cotg} u + c$
- 14) $\int \operatorname{sec} u \cdot \operatorname{tg} u du = \operatorname{sec} u + c$
- 15) $\int \operatorname{cosec} u \cdot \operatorname{cotg} u du = -\operatorname{cosec} u + c$
- 16) $\int \frac{du}{\sqrt{a^2 - u^2}} = \operatorname{arc} \operatorname{sen} \frac{u}{a} + c$
- 17) $\int \frac{du}{a^2 + u^2} = \frac{1}{a} \operatorname{arc} \operatorname{tg} \frac{u}{a} + c$
- 18) $\int \frac{du}{u\sqrt{u^2 - a^2}} = \frac{1}{a} \operatorname{arc} \operatorname{sec} \left| \frac{u}{a} \right| + c$
- 19) $\int \operatorname{senh} u du = \operatorname{cosh} u + c$
- 20) $\int \operatorname{cosh} u du = \operatorname{senh} u + c$
- 21) $\int \operatorname{tg} h u du = \ln|\operatorname{cosh} u| + c$
- 22) $\int \operatorname{cot} g h u du = \ln|\operatorname{senh} u| + c$
- 23) $\int \operatorname{sech}^2 u du = \operatorname{tgh} u + c$
- 24) $\int \operatorname{cosech}^2 u du = -\operatorname{cotgh} u + c$
- 25) $\int \operatorname{sech} u \cdot \operatorname{tgh} u du = -\operatorname{sech} u + c$
- 26) $\int \operatorname{cosech} u \cdot \operatorname{cotgh} u du = -\operatorname{cosec} h u + c$
- 27) $\int \frac{du}{\sqrt{u^2 \pm a^2}} = \ln \left| u + \sqrt{u^2 \pm a^2} \right| + c$
- 28) $\int \frac{du}{a^2 - u^2} = \frac{1}{2a} \ln \left| \frac{u+a}{u-a} \right| + c$
- 29) $\int \frac{du}{u\sqrt{a^2 \pm u^2}} = -\frac{1}{a} \ln \left| \frac{a + \sqrt{a^2 \pm u^2}}{u} \right| + c$
- 30) $\int u \cdot dv = u \cdot v - \int v du$

Identidades Trigonômicas

- 1) $\operatorname{sen}^2 x + \operatorname{cos}^2 x = 1$
- 2) $1 + \operatorname{tg}^2 x = \operatorname{sec}^2 x$
- 3) $1 + \operatorname{cot}^2 x = \operatorname{cosec}^2 x$
- 4) $\operatorname{sen}^2 x = \frac{1}{2}(1 - \operatorname{cos} 2x)$
- 5) $\operatorname{cos}^2 x = \frac{1}{2}(1 + \operatorname{cos} 2x)$
- 6) $\operatorname{sen} 2x = 2 \operatorname{sen} x \cdot \operatorname{cos} x$
- 7) $\operatorname{sen} x \cdot \operatorname{cos} y = \frac{1}{2} [\operatorname{sen}(x-y) + \operatorname{sen}(x+y)]$
- 8) $\operatorname{sen} x \cdot \operatorname{sen} y = \frac{1}{2} [\operatorname{cos}(x-y) - \operatorname{cos}(x+y)]$
- 9) $\operatorname{cos} x \cdot \operatorname{cos} y = \frac{1}{2} [\operatorname{cos}(x-y) + \operatorname{cos}(x+y)]$