DERIVATE DELLE FUNZIONI ELEMENTARI

k	0
$\lvert x\rvert$	$\operatorname{sgn} x$
x^a	ax^{a-1}
x	1
$\log_a x$	$\frac{1}{x}\log_a e$
$\log x$	$\frac{1}{x}$
$\log_a \lvert x\rvert$	$\frac{1}{\lvert x\rvert}$
$\log\lvert x\rvert$	$\frac{1}{x}$
$\log\lvert f(x)\rvert$	$\frac{f'(x)}{f(x)}$
a^x	$a^x \log a$
e^x	e^x
$\operatorname{senh} x$	$\cosh x$
$\cosh x$	$\operatorname{senh} x$
$\mathit{sett}\operatorname{senh} x\left(\log\left(x+\sqrt{x^2+1}\right)\right)$	$\frac{1}{\sqrt{x^2+1}}$
$\mathit{sett}\cosh x\left(\log\left(x+\sqrt{x^2-1}\right)\right)$	$\frac{1}{\sqrt{x^2-1}}$
$\tanh x$	$1-\tanh^2 x=\frac{1}{\cosh^2 x}$
$\mathit{sett}\tanh x\left(\log\sqrt{\frac{1+x}{1-x}}\right)$	$\frac{1}{1-x^2}$
$\operatorname{sen} x$	$\cos x$
$\cos x$	$-\operatorname{sen} x$
$\arcsen x$	$\frac{1}{\sqrt{1-x^2}}$
$\arccos x$	$-\frac{1}{\sqrt{1-x^2}}$
$\tan x$	$\frac{1}{\cos^2 x}=1+\tan^2 x$
$\operatorname{arctg} x$	$\frac{1}{1+x^2}$
$\sqrt{x}$	$\frac{1}{2\sqrt{x}}$

N.B. $[f(x)]^{g(x)}$ si scrive come $e^{\log[f(x)]^{g(x)}}=e^{g(x)\cdot\log f(x)}$

FORMULA DI LEIBNIZ

$$D^n\left(f(x)g(x)\right)_{x=c} = \sum_{k=0}^{n}\binom{n}{k} f^{(k)}(c)\,g^{(n-k)}(c)$$

TEOREMA DI ROLLE

f derivabile continua tale che $f(b) = f(a)$; Ts. $\exists c \in \left]a,b\right[:$ $f'(c) = 0$

TEOREMA DI CAUCHY

f derivabile continua; Ts. $\begin{vmatrix} f(b)-f(a) & f'(c) \\ g(b)-g(a) & g'(c) \end{vmatrix} = 0 \Leftrightarrow \exists c : \dfrac{f(b)-f(a)}{g(b)-g(a)} = \dfrac{f'(c)}{g'(c)}$

TEOREMA DI LAGRANGE

f derivabile continua; Ts. $\exists c \in \left]a,b\right[:$ $\dfrac{f(b)-f(a)}{b-a} = f'(c)$