$$\lim_{n\to\infty} \sqrt[n]{a} = 1 \quad \text{pre } a > 1$$

$$\lim_{n\to\infty} \sqrt[n]{n} = 1$$

$$\lim_{n\to\infty} \sqrt[n]{n!} = \infty$$

$$\lim_{x\to 0} \frac{\sin x}{x} = \lim_{x\to 0} \frac{x}{\sin x} = 1$$

$$\lim_{n\to\infty} \frac{n!}{n^n} = 0$$

$$\lim_{n\to\infty} \frac{n^n}{n!} = \infty$$

$$\lim_{n\to\infty} \frac{n!}{n^k} = \infty \quad \text{pre } k \in N$$

$$\lim_{n\to\infty} \frac{n^k}{n!} = 0 \quad \text{pre } k \in N$$

$$\lim_{n\to\infty} \left(1 + \frac{1}{n}\right)^n = \mathrm{e}$$

$$\lim_{x\to 0} (1 + x)^{\frac{1}{x}} = \mathrm{e}$$

$$\lim_{x\to\infty} \left(1 + \frac{1}{x}\right)^x = \mathrm{e}$$

$$\lim_{n\to\infty} \left(1 + \frac{a}{n}\right)^n = \mathrm{e}^a$$

$$\lim_{x\to 0} (1 + ax)^{\frac{1}{x}} = \mathrm{e}^a$$

$$\lim_{x\to\infty} \left(1 + \frac{a}{x}\right)^x = \mathrm{e}^a$$

$$\lim_{n\to\infty} n\left(\sqrt[n]{\mathrm{e}} - 1\right) = 1$$

$$\lim_{n\to\infty} n\left(\sqrt[n]{a} - 1\right) = \ln a$$

$$\lim_{x\to 0} \frac{a^x - 1}{x} = \ln a$$

$$\lim_{x\to 0} \frac{\mathrm{e}^x - 1}{x} = \ln \mathrm{e} = 1$$

$$\lim_{n\to\infty}\left(1+\frac{1}{1!}+\cdots+\frac{1}{n!}\right)=\sum_{n=0}^{\infty}\frac{1}{n!}=\mathrm{e} \qquad \sum_{n=0}^{\infty}\frac{(-1)^n}{n!}=\frac{1}{\mathrm{e}}$$

$$\sum_{n=0}^{\infty} q^n=\frac{1}{1-q} \quad \text{pre } q\in(-1;1) \qquad \sum_{n=1}^{\infty}\frac{1}{n^p}=\begin{cases}\infty & \text{pre } p\in(0;1\rangle\\ \longmapsto & \text{pre } p\in(1;\infty)\end{cases}$$

$$(cf)'=cf' \qquad (f\pm g)'=f'\pm g'$$

$$(fg)'=f'g+fg' \qquad \left[\frac{f}{g}\right]'=\frac{f'g-fg'}{g^2}$$

$$[\text{konšt.}]'=0 \quad [x]'=1 \qquad \int \mathrm{d}x=\int 1\,\mathrm{d}x=x+c$$

$$[x^a]'=ax^{a-1} \qquad \int x^a\,\mathrm{d}x=\frac{x^{a+1}}{a+1}+c$$

$$[\mathrm{e}^x]'=\mathrm{e}^x \qquad \int \mathrm{e}^{ax}\,\mathrm{d}x=\frac{\mathrm{e}^{ax}}{a}+c$$

$$[a^x]'=a^x\ln a \qquad \int a^x\,\mathrm{d}x=\frac{a^x}{\ln a}+c \quad \text{pre } a>0$$

$$[\ln x]'=\frac{1}{x} \qquad \int\frac{\mathrm{d}x}{x}=\ln|x|+c$$

$[\sin x]' = \cos x$	$\int \cos ax \, dx = \frac{\sin ax}{a} + c$
$[\cos x]' = -\sin x$	$\int \sin ax \, dx = -\frac{\cos ax}{a} + c$
$[\sinh x]' = \cosh x$	$\int \cosh ax \, dx = \frac{\sinh ax}{a} + c$
$[\cosh x]' = \sinh x$	$\int \sinh ax \, dx = \frac{\cosh ax}{a} + c$
$[\operatorname{tg} x]' = \frac{1}{\cos^2 x}$	$\int \frac{dx}{\cos^2 ax} = \frac{\operatorname{tg} ax}{a} + c$
$[\operatorname{cotg} x]' = -\frac{1}{\sin^2 x}$	$\int \frac{dx}{\sin^2 ax} = -\frac{\operatorname{cotg} ax}{a} + c$
$[\operatorname{tgh} x]' = \frac{1}{\cosh^2 x}$	$\int \frac{dx}{\cosh^2 ax} = \frac{\operatorname{tgh} ax}{a} + c$
$[\operatorname{cotgh} x]' = -\frac{1}{\sinh^2 x}$	$\int \frac{dx}{\sinh^2 ax} = -\frac{\operatorname{cotgh} ax}{a} + c$

$$[\arcsin x]' = \frac{1}{\sqrt{1-x^2}} \qquad [\arccos x]' = -\frac{1}{\sqrt{1-x^2}}$$

$$\int \frac{\mathrm{d}x}{\sqrt{a^2-x^2}} = \arcsin \frac{x}{|a|} + c_1 = -\arccos \frac{x}{|a|} + c_2$$

$$\int \frac{\mathrm{d}x}{\sqrt{x^2-a^2}} = \ln \left| x + \sqrt{x^2 - a^2} \right| + c$$

$$\int \frac{\mathrm{d}x}{\sqrt{x^2+a^2}} = \ln \left(x + \sqrt{x^2 + a^2} \right) + c$$

$$[\operatorname{arctg} x]' = \frac{1}{1+x^2} \qquad [\operatorname{arccotg} x]' = -\frac{1}{1+x^2}$$

$$\int \frac{\mathrm{d}x}{x^2+a^2} = \frac{1}{a} \operatorname{arctg} \frac{x}{a} + c_1 = -\frac{1}{a} \operatorname{arccotg} \frac{x}{a} + c_2$$

$$\int \frac{\mathrm{d}x}{x^2-a^2} = \int \frac{1}{2a} \left[\frac{1}{x-a} - \frac{1}{x+a} \right] \mathrm{d}x = \frac{1}{2a} \ln \left| \frac{x-a}{x+a} \right| + c$$

$$\int \frac{f'(x)}{f(x)} \, \mathrm{d}x = \ln |f(x)| + c \quad \text{pre } a > 0,\ a \neq 1$$