$$\lim_{n\to\infty} \sqrt[n]{a} = 1 \text{ pre } a>1 \qquad \lim_{n\to\infty} \sqrt[n]{n} = 1 \qquad \lim_{n\to\infty} \sqrt[n]{n!} = \infty \qquad \lim_{x\to 0} \frac{\sin x}{x} = \lim_{x\to 0} \frac{x}{\sin x} = 1$$

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

$$\lim_{n\to\infty} \left(1+\tfrac{1}{n}\right)^n = \mathrm{e} \qquad \lim_{x\to 0} \left(1+x\right)^{\frac{1}{x}} = \mathrm{e} \qquad \lim_{x\to\infty} \left(1+\tfrac{1}{x}\right)^x = \mathrm{e}$$

$$\lim_{n\to\infty} \left(1+\tfrac{a}{n}\right)^n = \mathrm{e}^a \text{ pre } a\in R \qquad \lim_{x\to 0} \left(1+ax\right)^{\frac{1}{x}} = \mathrm{e}^a \text{ pre } a\in R \qquad \lim_{x\to\infty} \left(1+\tfrac{a}{x}\right)^x = \mathrm{e}^a \text{ pre } a\in R$$

$$\lim_{n\to\infty} n\left(\sqrt[n]{\mathrm{e}} - 1\right) = 1 \qquad \lim_{n\to\infty} n\left(\sqrt[n]{a} - 1\right) = \ln a \qquad \lim_{x\to 0} \frac{a^x - 1}{x} = \ln a \qquad \lim_{x\to 0} \frac{\mathrm{e}^x - 1}{x} = \ln \mathrm{e} = 1$$

$$\lim_{n\to\infty} \left(1+\tfrac{1}{1!}+\cdots+\tfrac{1}{n!}\right) = \sum_{n=0}^{\infty} \frac{1}{n!} = \mathrm{e} \qquad \sum_{n=0}^{\infty} \frac{(-1)^n}{n!} = \frac{1}{\mathrm{e}} \qquad \sum_{n=0}^{\infty} q^n = \frac{1}{1-q} \text{ pre } q\in(-1;1) \qquad \sum_{n=1}^{\infty} \frac{1}{n^p} = \begin{cases} \infty & \text{pre } p\in(0;1\rangle \\ \longmapsto & \text{pre } p\in(1;\infty) \end{cases}$$

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

$$[\text{konšt.}]' = 0 \qquad [x]' = 1 \qquad \int \mathrm{d}x = \int 1 \,\mathrm{d}x = x + c \qquad [x^a]' = ax^{a-1} \qquad \int x^a \,\mathrm{d}x = \frac{x^{a+1}}{a+1} + c \text{ pre } a\in R$$

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

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

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

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

$$[\mathrm{tg}\,x]' = \frac{1}{\cos^2 x} \qquad \int \frac{\mathrm{d}x}{\cos^2 ax} = \frac{\mathrm{tg}\,ax}{a} + c \qquad [\cot g\,x]' = -\frac{1}{\sin^2 x} \qquad \int \frac{\mathrm{d}x}{\sin^2 ax} = -\frac{\cot g\,ax}{a} + c$$

$$[\mathrm{tgh}\,x]' = \frac{1}{\cosh^2 x} \qquad \int \frac{\mathrm{d}x}{\cosh^2 ax} = \frac{\mathrm{tgh}\,ax}{a} + c \qquad [\cot gh\,x]' = -\frac{1}{\sinh^2 x} \qquad \int \frac{\mathrm{d}x}{\sinh^2 ax} = -\frac{\cot gh\,ax}{a} + c$$

$$[\arcsin x]' = \frac{1}{\sqrt{1-x^2}} \qquad [\arccos x]' = -\frac{1}{\sqrt{1-x^2}} \qquad \int \frac{\mathrm{d}x}{\sqrt{a^2 - x^2}} = \arcsin \frac{x}{|a|} + c_1 = -\arccos \frac{x}{|a|} + c_2$$

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

$$[\mathrm{arctg}\,x]' = \frac{1}{1+x^2} \qquad [\mathrm{arccotg}\,x]' = -\frac{1}{1+x^2} \qquad \int \frac{\mathrm{d}x}{x^2 + a^2} = \frac{1}{a} \mathrm{arctg} \frac{x}{a} + c_1 = -\frac{1}{a} \mathrm{arccotg} \frac{x}{a} + c_2$$

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