Анализа 1

Таблица извода

$$
\begin{aligned}
c' &= 0,\ c = const \\
(x^a)' &= ax^{a-1},\ (a \neq 0) \\
(\sin x)' &= \cos x \\
(\cos x)' &= -\sin x \\
(\mathrm{tg}\ x)' &= \frac{1}{\cos^2 x} \\
(\mathrm{ctg}\ x)' &= -\frac{1}{\sin^2 x} \\
(\mathrm{sh}\, x)' &= \mathrm{ch}\, x \\
(\mathrm{ch}\, x)' &= \mathrm{sh}\, x \\
(\mathrm{th}\, x)' &= \frac{1}{\mathrm{ch}^2 x} \\
(\mathrm{cth}\, x)' &= -\frac{1}{\mathrm{sh}^2 x} \\
(a^x)' &= a^x \ln a,\ (a > 0) \\
(e^x)' &= e^x \\
(\log_a x)' &= \frac{1}{x \ln a},\ (a > 0, a \neq 1, x > 0) \\
(\ln x)' &= \frac{1}{x},\ (x > 0) \\
(\arcsin\ x)' &= \frac{1}{\sqrt{1-x^2}},\ (|x| < 1) \\
(\arccos\ x)' &= -\frac{1}{\sqrt{1-x^2}},\ (|x| < 1) \\
(\mathrm{arctg}\ x)' &= \frac{1}{1+x^2} \\
(\mathrm{arcctg}\ x)' &= -\frac{1}{1+x^2}
\end{aligned}
$$

Таблица интеграла

$$
\begin{aligned}
\int k dx &= kx + C \\
\int x^n dx &= \frac{x^{n+1}}{n+1} + C,\ (n \neq -1) \\
\int \frac{1}{x} dx &= \ln|x| + C \\
\int a^x dx &= \frac{a^x}{\ln a} + C,\ (a > 0, a \neq 1) \\
\int e^x dx &= e^x + C \\
\int \sin x dx &= -\cos x + C \\
\int \cos x dx &= \sin x + C \\
\int \frac{1}{\cos^2 x} dx &= \mathrm{tg}\ x + C \\
\int \frac{1}{\sin^2 x} dx &= -\mathrm{ctg}\ x + C \\
\int \frac{1}{a^2+x^2} dx &= \frac{1}{a}\mathrm{arctg}\ \frac{x}{a} + C,\ (a \neq 0) \\
\int \frac{1}{x^2-a^2} dx &= \frac{1}{2a} \ln\left|\frac{x-a}{x+a}\right| + C,\ (a \neq 0) \\
\int \frac{1}{\sqrt{a^2-x^2}} dx &= \arcsin\ \frac{x}{a} + C,\ (|x| < a, a \neq 0) \\
\int \frac{1}{\sqrt{x^2 \pm a^2}} dx &= \ln\left|x + \sqrt{x^2 \pm a^2}\right| + C,
\end{aligned}
$$

Комплексна анализа

Таблица

$$
\begin{aligned}
\sin(iz) &= i\,\mathrm{sh}\,z \\
\cos(iz) &= \mathrm{ch}\,z \\
\mathrm{sh}(iz) &= i\sin z \\
\mathrm{ch}(iz) &= \cos z \\
\mathrm{tg}(iz) &= i\,\mathrm{th}\,z \\
\mathrm{th}(iz) &= i\,\mathrm{tg}\,z \\
\mathrm{ctg}(iz) &= -i\,\mathrm{cth}\,z \\
\mathrm{cth}(iz) &= -i\,\mathrm{ctg}\,z
\end{aligned}
$$

$$
\begin{aligned}
\mathrm{Arcsin}\,z &= -i\,\mathrm{Ln}(iz+\sqrt{1-z^2}) \\
\mathrm{Arccos}\,z &= -i\,\mathrm{Ln}(z+\sqrt{z^2-1}) \\
\mathrm{Arctg}\,z &= \frac{1}{2i}\,\mathrm{Ln}\left(\frac{i-z}{i+z}\right) \\
\mathrm{Arcctg}\,z &= \frac{1}{2i}\,\mathrm{Ln}\left(\frac{z+i}{z-i}\right) \\
\mathrm{Arcsh}\,z &= \mathrm{Ln}(z+\sqrt{z^2+1}) \\
\mathrm{Arcch}\,z &= \mathrm{Ln}(z+\sqrt{z^2-1}) \\
\mathrm{Arcth}\,z &= \frac{1}{2}\,\mathrm{Ln}\left(\frac{1+z}{1-z}\right) \\
\mathrm{Arccth}\,z &= \frac{1}{2}\,\mathrm{Ln}\left(\frac{z+1}{z-1}\right)
\end{aligned}
$$

Тејлоров ред

$$
\begin{aligned}
e^z &= \sum_{n=0}^{\infty}\frac{z^n}{n!},\ R=\infty \\
\sin z &= \sum_{n=0}^{\infty}\frac{(-1)^n z^{2n+1}}{(2n+1)!},\ R=\infty \\
\cos z &= \sum_{n=0}^{\infty}\frac{(-1)^n z^{2n}}{(2n)!},\ R=\infty \\
\frac{1}{1-z} &= \sum_{n=0}^{\infty} z^n\ ,R=1 \\
\ln(1+z) &= \sum_{n=1}^{\infty}(-1)^{n+1}\frac{z^n}{n}\ ,R=1 \\
(1+z)^\alpha &= \sum_{n=0}^{\infty}\binom{\alpha}{n}z^n\ ,R=1 \\
\binom{\alpha}{n} &= \frac{\alpha(\alpha-1)\cdots(\alpha-n+1)}{n!}
\end{aligned}
$$