Разложение функций в степенные ряды

$$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \cdots + (-1)^n \frac{x^{2n+1}}{(2n+1)!} + \ldots, \quad |x| < \infty.$$

$$\sin(x+a) = \sin a + x\cos a - \frac{x^2 \sin a}{2!} - \frac{x^3 \cos a}{3!} + \cdots + \frac{x^n \sin(a + \pi n/2)}{n!} + \ldots, \quad |x| < \infty.$$

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \cdots + (-1)^n \frac{x^{2n}}{(2n)!} + \ldots, \quad |x| < \infty.$$

$$\cos(x+a) = \cos a - x\sin a - \frac{x^2 \cos a}{2!} + \frac{x^3 \sin a}{3!} + \cdots + \frac{x^n \cos(a + \pi n/2)}{n!} + \ldots, \quad |x| < \infty.$$

$$e^x = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots + \frac{x^n}{n!} + \ldots, \quad |x| < \infty.$$

$$a^x = e^{x \ln a} = 1 + \frac{x \ln a}{1!} + \frac{(x \ln a)^2}{2!} + \frac{(x \ln a)^3}{3!} + \cdots + \frac{(x \ln a)^n}{n!} + \ldots, \quad |x| < \infty.$$

$$\ln(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots (-1)^{n+1} \frac{x^n}{n} + \ldots, \quad |x| < 1.$$

$$\ln(1-x) = -\left[x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + \ldots \frac{x^n}{n} + \ldots\right], \quad |x| < 1.$$

$$\operatorname{sh} x = x + \frac{x^3}{3!} + \frac{x^5}{5!} + \cdots + \frac{x^{2n+1}}{(2n+1)!} + \ldots, \quad |x| < \infty.$$

$$\operatorname{ch} x = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \cdots + \frac{x^{2n}}{(2n)!} + \ldots, \quad |x| < \infty.$$

$$\frac{1}{1 \mp x} = 1 \pm x + x^2 \pm x^3 + x^4 \pm \ldots, \quad |x| < 1.$$