Laurent series

$$e^z = \sum_{n=0}^{\infty} \frac{1}{n!} z^n \qquad |z| < \infty$$

$$\sin z = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} z^{2n+1} \qquad |z| < \infty$$

$$\cos z = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n)!} z^{2n} \qquad |z| < \infty$$

$$\sinh z = \sum_{n=0}^{\infty} \frac{1}{(2n+1)!} z^{2n+1} \qquad |z| < \infty$$

$$\cosh z = \sum_{n=0}^{\infty} \frac{1}{(2n)!} z^{2n} \qquad |z| < \infty$$

$$\frac{1}{1-z} = \sum_{n=0}^{\infty} z^n \qquad |z| < 1$$

$$\frac{1}{1-z} = \sum_{n=0}^{\infty} -z^{-n-1} \qquad |z| > 1$$

$$\frac{1}{1+z} = \sum_{n=0}^{\infty} (-1)^n z^n \qquad |z| < 1$$

$$\ln(1+z) = \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} z^n \qquad |z| < 1$$

$$(1+z)^\alpha = \sum_{n=0}^{\infty} \binom{\alpha}{n} z^n \qquad |z| < 1$$

$$e^{-1/z^2} = \sum_{n=0}^{\infty} \frac{(-1)^n}{n!} z^{-2n} \qquad 0 < |z| < \infty$$

$$\arcsin z = \sum_{n=0}^{\infty} \frac{(2n)!}{4^n (n!)^2 (2n+1)} z^{2n+1} \qquad |z| < 1$$

$$\arctan z = \sum_{n=0}^{\infty} \frac{(-1)^n}{2n+1} z^{2n+1} \qquad |z| < 1$$

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