$$\frac{1}{1+x}=\sum_{n=0}^{\infty}(-1)^n x^n, -1<x<1$$

$$\frac{1}{1-x}=\sum_{n=0}^{\infty}x^n, -1<x<1$$

$$\frac{1}{(1-x)^2}=\sum_{n=0}^{\infty}(n+1)x^n, -1<x<1$$

$$\frac{2}{(1-x)^3}=\sum_{n=0}^{\infty}(n+1)(n+2)x^n, -1<x<1$$

$$\frac{1}{1+x^2}=\sum_{n=0}^{\infty}(-1)^n x^{2n}, -1<x<1$$

$$\arctan x=\sum_{n=0}^{\infty}(-1)^n \frac{x^{2n+1}}{2n+1}, -1\leqslant x\leqslant 1$$

$$\ln(1+x)=\sum_{n=1}^{\infty}(-1)^{n-1}\frac{x^n}{n}, -1<x\leqslant 1$$

$$\ln(1-x)=-\sum_{n=1}^{\infty}\frac{x^n}{n}, -1\leqslant x<1$$

$$\ln\left(\frac{1+x}{1-x}\right)=2\sum_{n=1}^{\infty}\frac{x^{2n+1}}{2n+1}, -1<x<1$$

$$e^x=\sum_{n=0}^{\infty}\frac{x^n}{n!}, -\infty<x<\infty$$

$$e^{-x}=\sum_{n=0}^{\infty}(-1)^n\frac{x^n}{n!}, -\infty<x<\infty$$

$$\frac{e^x+e^{-x}}{2}=\sum_{n=0}^{\infty}\frac{x^{2n+1}}{(2n+1)!}, -\infty<x<\infty$$

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

$$\cos x=\sum_{n=0}^{\infty}(-1)^n\frac{x^{2n}}{(2n)!}, -\infty<x<\infty$$