

SHORT TABLE OF STANDARD EXPANSIONS

You must either memorize the following expansions or be able to quickly reproduce them.

- (geometric series)

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

- (Exponential)

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

- (Trig)

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

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

- (logarithm)

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

- (inverse tangent)

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