Δυναμοσειρές – Αναπτύγματα Maclaurin (Taylor στο $x_0 = 0$)

- $\dfrac{1}{1-x} = \displaystyle\sum_{n=0}^{+\infty} x^n \Rightarrow$

  $\Rightarrow \dfrac{1}{1-x} = 1 + x + x^2 + \cdots + x^n + \cdots, |x| < 1$

- $e^x = \displaystyle\sum_{n=0}^{+\infty} \frac{1}{n!} \cdot x^n \Rightarrow$

  $\Rightarrow e^x = 1 + \dfrac{1}{1!} \cdot x + \dfrac{1}{2!} \cdot x^2 + \cdots + \dfrac{1}{n!} \cdot x^n + \cdots, x \in \mathrm{R}$

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

  $\Rightarrow \sin x = \dfrac{1}{1!} \cdot x - \dfrac{1}{3!} \cdot x^3 + \cdots + (-1)^n \cdot \dfrac{1}{(2 \cdot n + 1)!} \cdot x^{2 \cdot n+1} + \cdots, x \in \mathrm{R}$

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

  $\Rightarrow \cos x = 1 - \dfrac{1}{2!} \cdot x^2 + \dfrac{1}{4!} \cdot x^4 - \cdots + (-1)^n \cdot \dfrac{1}{(2 \cdot n)!} \cdot x^{2 \cdot n} + \cdots, x \in \mathrm{R}$

- $\sinh x = \displaystyle\sum_{n=0}^{+\infty} \frac{1}{(2 \cdot n + 1)!} \cdot x^{2 \cdot n+1} \Rightarrow$

  $\Rightarrow \sinh x = \dfrac{1}{1!} \cdot x + \dfrac{1}{3!} \cdot x^3 + \cdots + \dfrac{1}{(2 \cdot n + 1)!} \cdot x^{2 \cdot n+1} + \cdots, x \in \mathrm{R}$

- $\cosh x = \displaystyle\sum_{n=0}^{+\infty} \frac{1}{(2 \cdot n)!} \cdot x^{2 \cdot n} \Rightarrow$

  $\Rightarrow \cosh x = 1 + \dfrac{1}{2!} \cdot x^2 + \dfrac{1}{4!} \cdot x^4 + \cdots + \dfrac{1}{(2 \cdot n)!} \cdot x^{2 \cdot n} + \cdots, x \in \mathrm{R}$