42707 ANÁLISE MATEMÁTICA II
LIÇÕES IV

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1.5.(4+1) Alguns desenvolvimentos bis

$$e^x = 1+\sum_{n=1}^{\infty}\frac{x^n}{n!} = \sum_{n=0}^{\infty}\frac{x^n}{n!} \quad (x\in\mathbb{R})$$

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

$$\operatorname{sen} x = \sum_{n=0}^{\infty}(-1)^n\frac{x^{2n+1}}{(2n+1)!} \quad (x\in\mathbb{R})$$

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

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

$$\binom{\alpha}{n} := \frac{\prod_{i=0}^{n-1}(\alpha-i)}{n!} \quad (\alpha\in\mathbb{R}\setminus\{0\}; n\in\mathbb{N}_0)$$

$$(1+x)^\alpha = \sum_{n\geq 0}\binom{\alpha}{n}x^n \quad (\alpha\in\mathbb{R}\setminus\{0\}; |x|<1)$$

$$\left(\sum_{n=0}^{\infty}a_nX^n\right)+\left(\sum_{n=0}^{\infty}b_nX^n\right) = \sum_{n=0}^{\infty}(a_n+b_n)X^n \quad (|X|<\min\{\rho_a,\rho_b\})$$

$$\left(\sum_{n=0}^{\infty}a_nX^n\right)\left(\sum_{n=0}^{\infty}b_nX^n\right) = \sum_{n=0}^{\infty}\left(\sum_{i+j=n}a_ib_j\right)X^n \quad (|X|<\min\{\rho_a,\rho_b\})$$