

## Análise Matemática II

### LISTA 5

$$(1) S(x) = \begin{cases} 1, & x \in ]0, 1] \\ 0, & x = 0 \end{cases}$$

$$(2) \text{ (a) } \sum_{n \geq 0} x^n / n! \\ \text{ (b)}$$

$$(3) \text{ (a) } \sum_{n \geq 0} (\log a)^n x^n / n!, x \in \mathbb{R} \\ \text{ (b) } (1/a^2) \sum_{n \geq 0} (-1)^n (x/a)^{2n}, |x| < |a| \\ \text{ (c) } \sum_{n \geq 0} (-1)^n x^{2n+1} / (2n+1), |x| < 1$$

$$(4) \text{ (a) } 2/3 \sum_{n \geq 0} (-1)^n (x-2)^n / 2^n, x \in ]0, 4[ \\ \text{ (b) } -17! / (3 \cdot 2^{16})$$

$$(5)$$

$$(6) \text{ (a) } \text{int } B = \emptyset, \partial B = B \cup \{(\frac{1}{2}, y) \in \mathbb{R}^2 : -\frac{1}{2} \leq y \leq \frac{1}{2}\}, B' = \partial B \\ \text{ (b) } \text{int } C = \emptyset, \partial C = \mathbb{R}^2 = C'$$

$$(7) \text{ (a) } \{(x, y) \in \mathbb{R}^2 : x^2 + y^2 \notin \{0, e\}, y \leq x\} \text{ nem aberto nem fechado} \\ \text{ (b) } \{(x, y) \in \mathbb{R}^2 : 0 < x + y - 2 \neq 1, y \geq x^2\} \\ \text{ (c) } \{(x, y) \in \mathbb{R}^2 : (y-1)^2 + x^2 \leq 1, xy > 0\}$$