Análise Matemática II
LISTA 4

(1) $f_n(x) = \begin{cases} \frac{1}{n}, & x \notin \mathbb{Q} \\ 0, & x \in \mathbb{Q} \end{cases}$

(2) (a) 0

 (b) 0

(3)

(4)

(5) 1

(6) (a) $-\log(1-x)$, $x \in [-1, 1[$

 (b) $\frac{x}{(1-x)^2}$, $x \in]-1, 1[$

 (c) $x\frac{1+x}{1-x}$, $x \in]-1, 1[$

 (d) $1 - x + \frac{1}{2}\log(x^2 - 2x)$, $x \in]0, 2[$

 (e) $x\log x - x + 1$, $x \in [0, 2]$

(7) (a) $\log 2 - \sum_{n \geq 1} \frac{(x-1)^n}{n2^n}$, $x \in [-1, 3[$

 (b) $\sum_{n \geq 1} n(x+1)^{n-1}$, $x \in]-2, 0[$

 (c) $-2\sum_{n \geq 1} \frac{(-1)^n}{n}[(x-1)^{n+2} + 2(x-1)^{n+1} + (x-1)^n]$, $x \in [0, 2[$

(8) (a)

 (b) $S'(0) = 0$, $S''(0) > 0$

 (c) $\frac{3x^2 - x^4}{(1-x^2)^2}$