MA 731 -Lista 3

1. Demonstrar os Lemas 3.4 e 3.5 do livro [1].

2. Demonstrar o Teorema de Picard–Lindelöf em espaços de Banach (veja Teorema 3.1 de [1]).

3. (Exercício 2.8 de [2]) Seja $\Omega = \{(x_1, x_2, x_3) \in \mathbb{R}^3 : x_1^4 + x_2^4 < 1; -1 < x_3 < 1\}$. Prove que a função $u(x_1, x_2, x_3) = (x_2^3, -x_1^3, 0)$ pertence a $H(\Omega)$ e $\Delta\mathbb{P}u \neq \mathbb{P}\Delta u$.

Referências

[1] A. Majda and A. Bertozzi, *Vorticity and incompressible flow*, Cambridge Texts in Applied Mathematics, vol. 27, Cambridge University Press, Cambridge, 2002.

[2] J. Robinson, J. Rodrigo and W. Sadowski, *The three-dimensional Navier-Stokes equations*, Cambridge Studies in Advanced Mathematics, 157. Cambridge University Press, Cambridge, 2016