Homework 8

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Exercise (2). *Suppose that the hypotheses of the Generalized Lax-Milgram theorem are satisfied. Suppose that $x_{0,1}$ and $x_{0,2}$ in $\mathscr{X}$ are such that the ssets $X + x_{0,1} = X + x_{0,2}$. Prove that the solutions $u_1 \in X + x_{0,1}$ and $u_2 \in X + x_{0,2}$ of the abstract variational problem agree. What does this say about Dirichlet BVP?*

Exercise (4). *BVP for $u(x,y) : \mathbb{R}^2 \to \mathbb{R}$. Write as a variational problem and show there exists a unique solution. Carefully define function spaces and identify where f must lie.*

Exercise (9).

Exercise (13).

Exercise (14).