- The GMP (28) is obviously equivalent to the following Constraint Variational Problem (CVP):

(30) $$\boxed{\text{Find } u \in V_g : a(u,v) = \langle f, v \rangle \ \forall v \in V_0}$$

This immediately follows from Theorem I.2.10 $\simeq$ Theorem 1.9 (NuPDE), since

- $a(\cdot,\cdot)$ is symmetric on V_0 (even on X),
- $a(\cdot,\cdot)$ is positive (even elliptic) on $V_0 \subset X$,
- $V_0 \subset X$ - subspace, $V_g = w_g + V_0$ - hyperplane.

- Exercise 2.11:

Under the Assumption (26), the CVP (30) has a unique solution $u \in V_g$ ($\exists !$) and the following a priori estimate is valid:

$$\|u\|_X \le \frac{1}{\alpha_1}\|f\|_{X^*} + \left(1 + \frac{\alpha_2}{\alpha_1}\right)\|w\|_X \quad \forall w \in V_g .$$

Solution: Homogenization + Lax & Milgram