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1.1 Membranes

Remark 1. *Consider the problem below with $\phi : \Omega \to \mathbb{R}$ unknown and given $f : \Omega \to \mathbb{R}$*

$$\begin{cases} -\triangle \phi = f & , \ in \ \Omega \\ \dfrac{\partial \phi}{\partial n} = 0 & , \ on \ \Gamma \equiv \partial\Omega \end{cases} \tag{1}$$

1. *If ϕ is the solution of (1), then $\phi + c$ will be also a solution for $c \in \mathbb{R}$. So, there is no uniqueness of (1).*
2. *Condition for f*

$$\int_\Omega f \ dx = \int_\Omega -\triangle \phi \ dx = \int_\Omega \nabla \cdot (-\nabla \phi) \ dx =$$