(The claim in Problem 9.5 as stated does not seem to correspond to what has been discussed in the text. We will change the problem as follows.)

Given a smooth domain $\Omega \subset \mathbb{R}^n$ and functions $a_{ij}, b_i, \alpha_i, \beta \in C^\infty(\Omega)$ (with $i, j = 1, \ldots, n$) with $(a_{ij})$ positive definite, $\sum_{i=1}^n \alpha_i \eta_i \neq 0$ (where $\eta_i$ is the unit outward pointing normal of $\Omega$). Prove that we can find $\epsilon_{ij}, \gamma \in C^\infty(\Omega)$ with $\epsilon_{ij}$ anti-symmetric such that for every $u \in C^\infty(\Omega),$

$$\sum_{i,j=1}^n \eta_i (a_{ij} + \epsilon_{ij}) \partial_j u + \sum_{j=1}^n (\eta_j b_j + \gamma) u = 0 \text{ on } \partial \Omega$$

$$\implies \sum_{i=1}^n \alpha_i \partial_i u + \beta u = 0 \text{ on } \partial \Omega.$$