Problem 1

From the linearized ideal fluid equations, about a homogeneous equilibrium \( n = n_0, p = p_0, \dot{u} = 0 \), find a zero frequency normal mode which has as eigenvector \( (\hat{n}, \hat{p}, \hat{u}_x = 0, \hat{u}_y = 0, \hat{u}_z) \) with \( \hat{k} = \hat{z} \) given. Find the relationship between \( \{\hat{n}, \hat{p}, \hat{u}_z\} \), if any.

Since \( p = nT \), find \( \hat{T} \) also.