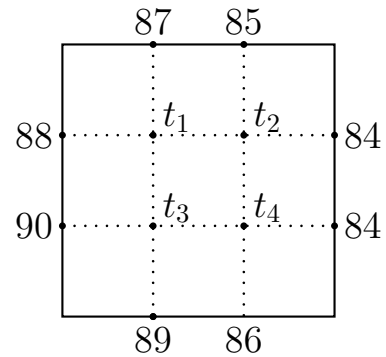Students are attempting to find the equilibrium temperatures t_1, t_2, t_3 and t_4 for a metal plate with boundary temperatures shown.

1. One student arrives at the solution

$$t_1 = 87.1, \quad t_2 = 83.6, \quad t_3 = 88.9, \quad t_4 = 85.7$$

Without doing any computations, how do we know that their solution is incorrect?**Think like an engineer!**

2. Another student gets the augmented matrix below when they attempt to solve the problem. How do we know that their system of equations is incorrect by simply looking at the matrix? **Think like a mathematician!**

$$\begin{bmatrix} 4 & -1 & -1 & 0 & 175 \\ -1 & 4 & -1 & 0 & 169 \\ -1 & 0 & 4 & -1 & 179 \\ 0 & -1 & -1 & 4 & 170 \end{bmatrix}$$