Assignment (10.15)

- **1.7**: 33, 34, 37, 38,

- **1.8**: 34, 38, 40

Problem 1 : Start with 100 equations $Ax = 0$ for 100 unknowns $x = (x_1, \ldots, x_{100})$. Suppose elimination reduces the 100th equation to $0 = 0$, so the system is "singular".

(a) Elimination takes linear combinations of the rows. So this singular system has the singular property: Some linear combination of the 100 **rows** is _____.

(b) Singular systems $Ax = 0$ have infinitely many solutions. This means that some linear combination of the 100 **columns** is _____.

(c) Invent a 100 by 100 singular matrix with no zero entries.

(d) For your matrix, describe in words the row picture and the column picture of $Ax = 0$. Not necessary to draw 100-dimensional space.