Assignment #4

I. Do exercises

8.1, 8.4,

II. Do additional exercises:

Exercise B. (This exercise replaces 8.5 which is not clearly stated.) Consider the pair of matrices

\[ A = \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix}, \quad B = \begin{pmatrix} 0 & 0 \\ 3 & 4 \end{pmatrix}. \]

Show that the statement “\(AB = 0\) implies that either \(A = 0\) or \(B = 0\)” is false. Show (separately) that if \(AB = 0\) then either \(A\) is singular or \(B\) is singular.

Exercise C. Prove formula (8.22), the parallelogram identity. Explain by a planar picture why it has this name.