Assigned Problems:

1) Text book, Chapter 1 Exercise #1.30 (postponed from HW#1)
2) If \( A = 11' \), describe the null space of \( A \) in words.
3) Text book, Chapter 2 Exercises # 2.2, #2.7, #2.14, #2.18
4) Text book, Chapter 3 Exercises #3.4, #3.7, #3.12, #3.17
5) Let \( A_{n \times n} \) be a non-singular matrix and \( C_{n \times m} \) be an arbitrary matrix, so \((A + CC')\) is not necessarily non-singular. Prove that its generalized inverse is given by

\[
(A + CC')^{-1} = A^{-1} - A^{-1}C(I + C'A^{-1}C)^{-1}C'A^{-1}.
\]

Note: You must write your own solutions for assigned problems, even though you are in a discussion team.

Try to solve as many of the following Unassigned Problems for practicing on using vectors and matrices. If you are part of a team working together, you could divvy up these problems among your team members, and then discuss the solutions in your team meeting.

- Text book, Chapter 1 Exercise #1.3, #1.5, #1.7, #1.13, #1.17, #1.19, #1.31, #1.32
- Text book, Chapter 2 Exercises #2.8, #2.10
- Text book, Chapter 3 Exercises #3.2, #3.10, #3.13
- Let \( A_{n \times n} \) be a symmetric matrix of rank \((n - 1)\) such that \( A1 = 0 \). Show that \( B = A + \frac{1}{n}11' \)

is non-singular and its inverse is given by \( A^+ + \frac{1}{n}11' \), where \( A^+ \) denotes the Moore-Penrose generalized inverse of \( A \).