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LINEAR MODELS AND DECISIONS MIDTERM-II

10 21) $\begin{pmatrix} 2 & -2 & 0 \\ 3 & -1 & 5 \end{pmatrix} \begin{pmatrix} 1 & 3 \\ 2 & -2 \\ -1 & 4 \end{pmatrix} = ?$

10 22) DEFINE TWO SETS OF NECESSARY AND SUFFICIENT CONDITIONS FOR A MATRIX TO HAVE AN INVERSE.

10 23) WHAT IS THE PROJECTION INTO THE SPACE SPANNED BY THE COLUMNS OF THE MATRIX T, WITH NO CHANGE OF BASIS, AND ASSUMING T IS OF FULL RANK?

10 24) SHOW THAT $P = PP$ FOR P A PROJECTION.

15 25) SOLVE FOR X IN $X = (X-Y)N$ ASSUMING ALL NECESSARY INVERSES EXIST.

10 26) DEFINE A RANDOM VARIABLE.

10 27) DEFINE A RANDOM VECTOR.

10 28) DEFINE EXPECTATION OF A RANDOM VARIABLE.

10 29) DEFINE EXPECTATION OF A RANDOM VECTOR.

10 30) DEFINE THE VARIANCE OF A RANDOM VECTOR.

10 31) DEFINE A UNIT NORMAL DISTRIBUTION.

10 32) DEFINE A χ^2 DISTRIBUTION.

10 33) DEFINE A t DISTRIBUTION.

10 34) DEFINE AN F DISTRIBUTION.

10 35) SHOW THAT $\dfrac{\bar{X}-\mu}{\sqrt{S^2/N}}$ HAS A $t_{(N-1)}$ DISTRIBUTION.