Worksheet 5   Numerical Analysis Spring 2023

Name: _____

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Work in groups of at least 2 and at most 4.

Problem 1. Suppose $\mathbf{A} = \mathbf{R}^{\mathsf{T}}\mathbf{R}$. Show that $\mathbf{x}^{\mathsf{T}}\mathbf{A}\mathbf{x} \geq 0$.

Problem 2. Apply PLU factorization (no pivoting if the rows have the same magnitude) to

$$A = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 \\ -1 & 1 & 0 & 0 & 1 \\ -1 & -1 & 1 & 0 & 1 \\ -1 & -1 & -1 & 1 & 1 \\ -1 & -1 & -1 & -1 & 1 \end{bmatrix}.$$