Quiz 1a Numerical Analysis Spring 2023

Name: _____ NetID: | | | | | | | | | | |

Define

$$\mathbf{A} = \begin{bmatrix} 3 & 2 & -1 \\ -4 & 3 & 5 \\ 1 & 3 & -2 \\ -2 & 4 & 1 \end{bmatrix}, \quad \mathbf{x} = \begin{bmatrix} 1 \\ 3 \\ -1 \end{bmatrix}, \quad \mathbf{y} = \begin{bmatrix} -1 \\ 0 \\ 4 \end{bmatrix}$$

Problem 1. Compute $\mathbf{Ax}$

Problem 2. Compute $\mathbf{Ay}$

Define

$$\mathbf{A} = \begin{bmatrix} 3 & 2 & -1 \\ -4 & 3 & 5 \\ 1 & 3 & -2 \\ -2 & 4 & 1 \end{bmatrix}, \quad \mathbf{B} = \begin{bmatrix} -1 & 1 \\ 0 & 3 \\ 4 & -1 \end{bmatrix}, \quad \mathbf{D} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & 3 & 0 \\ 0 & 0 & 0 & 4 \end{bmatrix}.$$

Problem 3. Compute **AB**

Problem 4. Compute **DA**

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Instructions:

- Do not begin until instructed.
- Fill out your name at netID
- Show your work clearly and circle your final answer.
- You can use this paper for scratch paper, but it will not be collected or graded.
- Do not look at anyone other student's solutions.

Formula for the product of a $m \times n$ matrix $\mathbf{A}$ and $n \times p$ matrix $\mathbf{B}$:

$$[\mathbf{AB}]_{i,j} = \sum_{k=1}^{n} [\mathbf{A}]_{i,k} [\mathbf{B}]_{k,j}$$