Daniel B. Szyld 17 January 2023

**Linear Algebra, Math 2101-002**
**Homework set #1**
Due Tuesday 24 January 2023. 9:30 AM

**1.** Exercise 1.2.3 from the book.

**2.** Exercise 1.2.5 from the book.

**3.** Exercise 2.1.1 from the book.

**4.** Consider a $2 \times 2$ linear system, i.e., of the form

$$\begin{array}{rcrcl} a_{11}x_1 & + & a_{12}x_2 & = & b_1 \\ a_{21}x_1 & + & a_{22}x_2 & = & b_2 \end{array},$$

or equivalently $Ax = b$, of the form

$$\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} b_1 \\ b_2 \end{bmatrix}.$$

Suppose that you are told that this system has the following two solutions: $(x_1, x_2) = (2, 1)$ and $(x_1, x_2) = (3, 2)$. Please provide values for the entries of $A$ and $b$ so that this is possible, i.e., so that these two pairs of values are indeed solutions of $Ax = b$.