DASC 2594 – Multivariable Math for Data Scientists
Assessment 2
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Problem 1

For the following, is $\mathbf{y}$ a solution to the equation $\mathbf{Ax} = \mathbf{b}$? First show by hand, then show using R.

a)

$$\mathbf{A} = \begin{pmatrix} 4 & 2 \\ 3 & 7 \end{pmatrix} \qquad \mathbf{y} = \begin{pmatrix} 4 \\ 7 \end{pmatrix} \qquad \mathbf{b} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$$

b)

$$\mathbf{A} = \begin{pmatrix} 3 & 2 & 6 \\ 4 & 3 & 5 \\ 7 & 2 & -3 \end{pmatrix} \qquad \mathbf{y} = \begin{pmatrix} 3 \\ -2 \\ 1 \end{pmatrix} \qquad \mathbf{b} = \begin{pmatrix} -1 \\ 2 \\ -3 \end{pmatrix}$$

Problem 2

Solve the system of linear equations $\mathbf{Ax} = \mathbf{0}$

- TBD

Problem 3

In the following problems, describe what the matrix $\mathbf{A}$ does to the vector $\mathbf{x}$

a)

$$\mathbf{A} = \begin{pmatrix} 2 & 0 \\ 0 & 2 \end{pmatrix} \qquad \mathbf{x} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

Problem 4

Problem 5