

Stamatios Morellas

COM S 474 - Final Exam

11/24/2020

Pledge

“I affirm that the work on this exam is my own and I will not use any people to help me nor will I share any part of this exam or my work with others without permission of the instructor.”

Question 1

The result of the Hadamard product $A \circ B$ is shown below:

$$A \circ B = \begin{pmatrix} 1 & 1/2 & 1/3 \\ 1/3 & 1/2 & 1 \end{pmatrix} \circ \begin{pmatrix} 1/2 & 1 & 6 \\ 3 & -4 & 2 \end{pmatrix} = \begin{pmatrix} 1/2 & 1/2 & 2 \\ 1 & -2 & 2 \end{pmatrix}$$

Question 2

The result of AB^T :

$$AB^T = \begin{pmatrix} 1 & 1/2 & 1/3 \\ 1/3 & 1/2 & 1 \end{pmatrix} \begin{pmatrix} 0.5 & 3 \\ 1 & -4 \\ 6 & 2 \end{pmatrix} = \begin{pmatrix} 3 & 1.66667 \\ 6.66667 & 1 \end{pmatrix}$$

The result of BA^T :

$$BA^T = \begin{pmatrix} 0.5 & 1 & 6 \\ 3 & -4 & 2 \end{pmatrix} \begin{pmatrix} 1 & 1/3 \\ 1/2 & 1/2 \\ 1/3 & 1 \end{pmatrix} = \begin{pmatrix} 3 & 6.66667 \\ 1.66667 & 1 \end{pmatrix}$$

Question 3

Given $f(x) = x + 1$, the value of $f(AB^T) = \mathbf{AB}^T + \mathbf{1}$.

Question 4