CSCI 4631/5631 Homework 1

1) Let matrix A be: $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$. Let vector **w** be: $\begin{bmatrix} -2 \\ 2 \\ 0 \end{bmatrix}$. What is the result of the operation A**w**?

2) Let matrix B be: $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$. What is the result of the operation B**w**?

3) Let matrix C be: $\begin{bmatrix} 1 & 4 & 3 \\ 4 & 5 & 1 \\ 7 & 2 & 2 \end{bmatrix}$. What is the result of the operation AC? CA?

4) Let vector **v** be: $\begin{bmatrix} 2 \\ 0 \\ 3 \end{bmatrix}$. What is the length of **w**? **v**? Normalize **w**. What is the new length? Show your work.

5) What is the angle between **w** and **v**? What is the cross product **w** x **v**? Show your work, and do your best to draw the second operation.