CSCI 1900 - Homework 7-B

**Section 2.6: Matrices** *(20)*

Let $A= \left[\begin{matrix} 4&-3&5 \\7&0&2 \end{matrix}\right]$ $B= \left[\begin{matrix} 2 \\ 7 \\-3 \end{matrix}\right]$ $C= \left[\begin{matrix}1&5&3\\ -5&1&-2 \\7&2&1\end{matrix}\right]$

1. What is a23? (1)
2. What is a12? (1)
3. What is b31? (1)
4. What is c23? (1)
5. What is c32? (1)
6. What is c22? (1)
7. Is *C* a diagonal matrix? (1)
8. Given

$$\left[\begin{matrix} 2a+b&c+d\\c-d&a+2b \end{matrix}\right] = \left[\begin{matrix} 7&8 \\ 0&5 \end{matrix}\right]$$

 Find the values for a, b, c, and d. (4)

Let $D= \left[\begin{matrix} 1&2&-3 \\ 3&4&1 \end{matrix}\right]$ $E= \left[\begin{matrix} 1&2 \\ 2&3 \\ 0&4 \end{matrix}\right]$ $F= \left[\begin{matrix} 1&2&-1 \\ 2&3&4\\ 4&2&1\end{matrix}\right]$

 $G= \left[\begin{matrix}2&-1\\3&4\end{matrix}\right]$ $H= \left[\begin{matrix} 4&2&1\\ 3&2&-2 \\ 5&0&1\end{matrix}\right]$ $J= \left[\begin{matrix}1&2\\-2&4\end{matrix}\right]$

For Problems 9 – 15 perform the indicated computation. If it is not possible, say why it is not possible.

1. *F* + *H* (1)
2. 2*G* - *J* (1)
3. *D E* (1)
4. Verify that $G J \ne J G$. (1)
5. Without calculating *E D*, why do you know that $D E\ne E D$ ? (1)
6. *ET* (1)
7. $\left(E^{T}\right)^{T}$ (1)

For Problems 16 - 18 Let $A= \left[\begin{matrix} 0&1&0 \\ 1&0&1 \\ 1&1&1 \end{matrix}\right]$ $B= \left[\begin{matrix}1&1&0\\0&0&1\\0&1&1\end{matrix}\right]$

1. Compute . (1)
2. Compute . (1)