Dawson College: **Linear Algebra** (SCIENCE): 201-NYC-05-S6: Fall 2015

Name: _____
Student ID: _____

Quiz 3

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. §1.3 #5k *(3 marks)* Consider the matrices

$$A=\begin{bmatrix}3&0\\-1&2\\1&1\end{bmatrix}, B=\begin{bmatrix}4&-1\\0&2\end{bmatrix}, C=\begin{bmatrix}1&4&2\\3&1&5\end{bmatrix}, D=\begin{bmatrix}1&5&2\\-1&0&1\\3&2&4\end{bmatrix}, E=\begin{bmatrix}6&1&3\\-1&1&2\\4&1&3\end{bmatrix}$$

Compute the given expression (if possible): $\text{tr}(DE^T)$.

Question 2. §1.3 #TF *(2 marks)* Determine whether the statement is true or false, and justify your answer.
If A and B are square matrices of the same order, then $\text{tr}(AB)=\text{tr}(A)\text{tr}(B)$.

Question 3. §1.4 #8 *(3 marks)* Find the inverse of

$$\begin{bmatrix}\cos\theta&\sin\theta\\-\sin\theta&\cos\theta\end{bmatrix}$$

Question 4. §1.4 #TF *(2 marks)* Determine whether the statement is true or false, and justify your answer.
For all matrices A and B of the same size, it is true that $A^2-B^2=(A-B)(A+B)$.