Quiz 3 (Sections 1.3, 1.4)

You will have 30 minutes to complete the quiz.

Name:
Student Number:

Q1 Consider the following matrices A and B.

$$A = \begin{bmatrix} 1 & 0 \\ -2 & 1 \\ 1 & 3 \end{bmatrix} \quad B = \begin{bmatrix} -4 & 1 \\ 0 & 1 \end{bmatrix}$$

Compute the following quantities, where defined. (3 Points)

a. AB b. B^2 c. A^2

Q2 Let $C \in M_n(\mathbb{R})$.

a. In one sentence, describe the computation of the trace. (1 Point)

b. Prove or disprove the fact that $\text{tr}(C) = \text{tr}(C^T)$. (2 Points)

Q3 Determine whether the following statements are true or false. You do not need to justify your work. Here, A, B, C are matrices, and O is the zero matrix.

a. If $AB = O$, then $A = O$ or $B = O$. (0.5 Points)

b. If $AB = C$ and two of the matrices are square, then so is the third. (0.5 Points)

c. If AB and BA exists, then $AB = BA$. (0.5 Points)

d. If $AC = BC$, then $A = B$. (0.5 Points)

Q1

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Q2

Q3

a. **TRUE** **FALSE**

b. **TRUE** **FALSE**

c. **TRUE** **FALSE**

d. **TRUE** **FALSE**