Quiz (Chapter 5)

Dr. Abdul-Rahman

Name: _____ **Signature:** _____

SHOW ALL YOUR WORK!

Mark each statement as **True** or **False**.

- ( ) If $A\mathbf{x} = \lambda\mathbf{x}$ for some vector $\mathbf{x}$, then λ is an eigenvalue of A.
- ( ) A matrix A is not invertible if and only if 0 is an eigenvalues of A.
- ( ) A number c is an eigenvalue of A if and only if the equation $(A - c\mathbb{1})\mathbf{x} = \mathbf{0}$ has nontrivial solution.
- ( ) For any square matrix A, the eigenvalues can be found by reducing the matrix to echelon form.
- ( ) If $\mathbf{v}_1$ and $\mathbf{v}_2$ are linearly independent eigenvectors, then they correspond to two distinct eigenvalues.
- ( ) The eigenspace is a null space of a certain matrix.
- ( ) If $\mathbb{R}^n$ has a basis of eigenvectors of A, the A is diagonalizable.
- ( ) If A is invertible then it is diagonalizable.
- ( ) Similar matrices always have exactly the same eigenvalues.
- ( ) If a 5×5 matrix has less than 5 distinct eigenvalues, then A is not diagonalizable.