Prove OR Disprove as follows.

If True: **Justify very BRIEFLY**

If False: **Make the best correction with a proof** OR **Disprove** by any argument

 OR **Give a counter example**.

True-False without any justification will be given NO credit and NO penality

1a) Similar matrices have the same characteristic equation and same eigenvalues.

1b) A square matrix A and its transpose have the same eigenvalues.

1c) If A&B are diagonalizable square matrices with the same transition matrix P, then AB=BA

1d) The matrix is diagonalizable.

1e) If an n×n matrix A has n eigenvalues, then A is diagonalizable.

1f) If an n×n matrix A is diagonalizable and A500=0, then A=0.

1g)It is possiblefor a 4×4 matrix A with 2 eigenvalues (only) to be diagonalizable.

2a) $Let T:V\rightarrow W$ be a linear transformation such that dimV=dim W= n. Then T is an isomorphism.

2b) Suppose dimV=dim W= n. Then V is isomorphic to W.

2c) Any linear transformation maps linearly independent vectors to linearly independent vectors.

2d) Problem 39 page 274: A linear transformation $T:R^{3}\rightarrow R^{5}$ cannot be onto

2e) Problem 37 page 274.

2f) Let T be as in Problem 43 page 226. Then R(T)= All symmetric nxn matrices.

2g) Let T be as in Problem 37 page 249 with n=4. Then [T]B is upper-triangular

**For Suggestions to 3a) ------------------------------3g)**

**Consult our 2-page Handouts (problems 1-18 & 19abcde)**

Good Luck