Quiz 5
Math 416: Linear Algebra - Apr. 13, 2018
Please answer on this sheet.

Name: _____________________________________________ NetID: ______

[5×2 pts.] Answer the following questions. If True explain why and if False give an example.

(a) A matrix $A \in \mathcal{M}_{n \times n}(\mathbb{R})$ is diagonalizable iff for all eigenvalues of $A$, geometric and algebraic multiplicities are the same. T or F? Explain. ______

(b) Any matrix $A \in \mathcal{M}_{n \times n}(\mathbb{R})$ must have at least one real eigenvalue. T or F? Explain. ______

(c) If a matrix $A \in \mathcal{M}_{n \times n}(\mathbb{R})$ is diagonalizable with all eigenvalues in the interval $[-1/2, 1/2]$, the limit of $A^m$ as $m \to \infty$ exists. T or F? Explain. ______

(d) If $P, Q$ are transition matrices, then $\frac{1}{2}(P + Q)$ is also a transition matrix. T or F? Explain. ______

(e) A transition matrix is invertible. T or F? Explain. ______