QUIZ November 1, 2013

Clicker Instructions: A = True; B = False;
C = I don't know; D = No truth value
correct = 1pt; don't know = 0pt; wrong = 0pt

1. Let
$$P = \begin{bmatrix} .7 & .6 \\ .3 & .4 \end{bmatrix}, \quad \mathbf{q} = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$
The vector $\mathbf{q}$ is a probability vector, and the matrix P is a stochastic matrix.

2. Let
$$P = \begin{bmatrix} .7 & .6 \\ .3 & .4 \end{bmatrix}, \quad \mathbf{q} = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$
The vector $\mathbf{q}$ is a steady-state vector for P.

3. Let
$$P = \begin{bmatrix} .7 & .6 \\ .3 & .4 \end{bmatrix}, \quad \mathbf{q} = \begin{bmatrix} .5 \\ .5 \end{bmatrix}$$
Suppose P represents a Markov chain. If the system beings in state $\mathbf{q}$, then after one iteration, it is in state
$$\begin{bmatrix} .6 \\ .4 \end{bmatrix}$$

4. Let
$$P = \begin{bmatrix} .7 & .6 \\ .3 & .4 \end{bmatrix}.$$
Starting with any initial state, the Markov chain determined by P will tend toward a single steady state in the limit.

5. A stochastic matrix to be used for a Markov chain may be square or non-square.