1. For T= $\begin{bmatrix} 0 & 0.8 & 0.2 \\ 0.3 & 0 & 0.7 \\ 0. & 1 & 0 \end{bmatrix}$ find T^2

   Draw the transition diagram

   a) Irreducible ? Yes_____   No _____   b) Regular? Yes_____   No_____

2. Using the following initial state: $P_\circ = \begin{bmatrix} 0.2 & 0.3 & 0.5 \end{bmatrix}$, find the state vector after <u>two</u> transition for:

   $T = \begin{bmatrix} 0 & 0.3 & 0.7 \\ 0.2 & 0.8 & 0 \\ 0.5 & 0 & 0.5 \end{bmatrix}$

3. In Indianapolis, it was found that if it is raining today, then there is 80% chance of it raining again the next day.
   If it is dry today, then there is 60% chance of it being dry again the next day. Find the steady state vector.