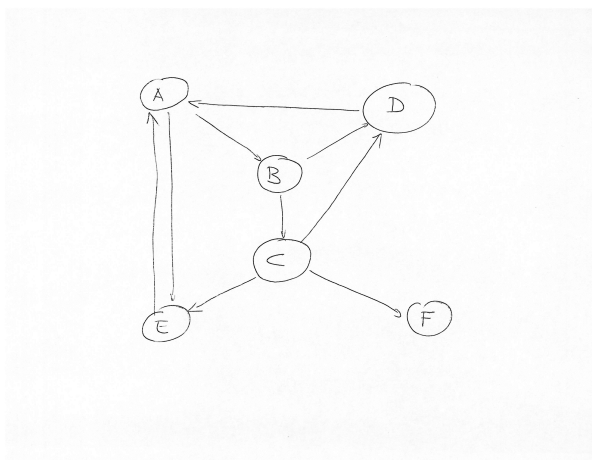


## Preparation problems for the discussion sections on May 1st and 2nd

1. Suppose there is an epidemic in which every month half of those who are well, become sick, and a quarter of those who are sick become dead. Set up a  $3 \times 3$  transition matrix  $A$  and find the steady state  $\mathbf{v}_\infty$ .
2. Find the page rank for the following system of webpages:



3. Solve the differential equation

$$\frac{du}{dt} = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix} u$$

with boundary condition  $u(0) = \begin{bmatrix} 3 \\ 1 \end{bmatrix}$ .