# Homework 26, Section 4.9: 1, 2, 6, 7, 12, 18

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## Homework

### 1. A)

$$\begin{matrix} & \text{N} & \text{M} \\ \begin{matrix} \\ \\ \end{matrix} & \begin{bmatrix} .7 & .6 \\ .3 & .4 \end{bmatrix} & \end{matrix}$$ News and Music

### 1. B)

$$\begin{bmatrix} 1 \\ 0 \end{bmatrix}$$

### 1. C)

Approximately 33

### 2. A)

1, 2, and 3 respectively at the tops and it goes to 1, 2, and 3 on the side respectively. $\begin{bmatrix} .6 & .2 & .2 \\ .2 & .6 & .2 \\ .2 & .2 & .6 \end{bmatrix}$

### 2. B)

Approximately .28

### 6.

$\begin{bmatrix} 4/7 \\ 3/7 \end{bmatrix}$ is the steady state vector.

### 7.

$\begin{bmatrix} 1/4 \\ 1/2 \\ 1/4 \end{bmatrix}$ is the steady state vector.

## 12.

Each food will be preferred equally, because $\begin{bmatrix} 1/3 \\ 1/3 \\ 1/3 \end{bmatrix}$ of the equal numbers in the steady state vector.

## 18.

If alpha = beta = 0, then $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$ and $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$ are the steady state vectors. If it is not 0, then it should equal $\frac{1}{\alpha+\beta}\begin{bmatrix} \beta \\ \alpha \end{bmatrix}$