$x_{n+k} =$

$$X(n+1) = f(X(n))$$

$$|A - \lambda E| = 0$$

$$A \cdot u = \lambda u$$

5 9-9:49

$$\begin{vmatrix} f_1-\lambda & f_2 & f_3 \\ \tau_1 & -\lambda & 0 \\ 0 & \tau_2 & -\lambda \end{vmatrix} = f_3 \cdot (-1)^4 \begin{vmatrix} \tau_1 & -\lambda \\ 0 & \tau_2 \end{vmatrix} + (-\lambda)(-1)^6 \begin{vmatrix} f_1-\lambda & f_2 \\ \tau_1 & -\lambda \end{vmatrix}$$

$$= f_3\tau_1\tau_2 - \lambda \cdot [(-\lambda)(f_1-\lambda) - f_2\tau_1]$$

$$= (-1) \cdot [\lambda^3 - f_1\lambda^2 - f_2\tau_1\lambda - f_3\tau_1\tau_2]$$

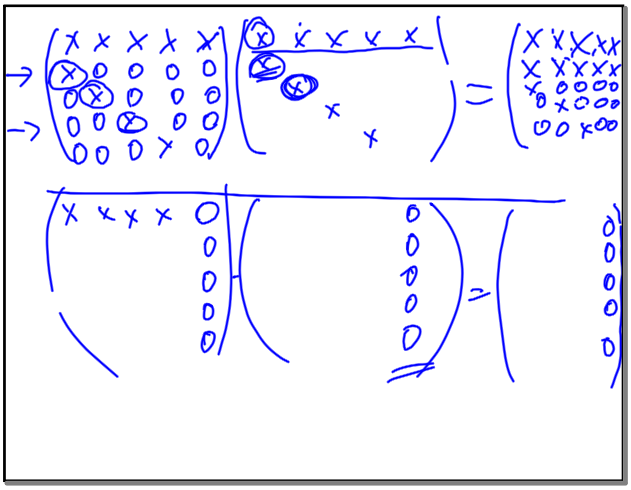
$$\lambda^m - f_1\lambda^{m-1} - f_2\tau_1\lambda^{m-2} - f_3\tau_1\tau_2$$

$$f = \lambda^m - a_1\lambda^{m-1} - a_2\lambda^{m-2} - \dots - a_m$$

$$\frac{f}{\lambda^m} = 1 - g(\lambda)$$

$$a_1\frac{1}{\lambda} + a_2\frac{1}{\lambda^2} + \dots + a_m\frac{1}{\lambda^m}$$

5 9-10:30



5 9-10:50

$P(S_1(t+1))$

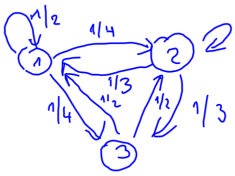
$$S_1(t+1) = (S_1(t+1) \cap S_1(t)) \cup (S_1(t+1) \cap S_2(t)) \cup (S_1(t+1) \cap S_3(t)) \cup \dots (S_1(t+1) \cap S_m(t))$$

$$P(\underbrace{S_1(t+1)}_{A} \cap \underbrace{S_m(t)}_{B}) = a_{1m} \cdot P_m(t)$$

$$P(A|B) = \frac{P(A \cap B)}{P(B)} \qquad P(A \cap B) = P(A|B) \cdot P(B)$$

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ \vdots & & & \\ a_{m1} & & & \end{pmatrix} \begin{pmatrix} p_1(t) \\ p_2(t) \\ p_3(t) \\ p_4(t) \end{pmatrix} = \begin{pmatrix} p_1(t+1) \\ p_2(t+1) \\ \vdots \end{pmatrix}$$

5 9-11:08



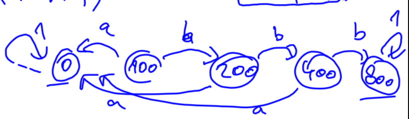
$a_{21} = 1/4 \qquad a_{33} = 0$

$$\left(\begin{array}{ccc|c} -\frac{1}{2} & \frac{1}{3} & \frac{1}{2} & 0 \\ \frac{1}{4} & -\frac{2}{3} & \frac{1}{2} & 0 \\ \cancel{\frac{1}{4}} & \cancel{\frac{1}{3}} & \cancel{-1} & \cancel{0} \end{array}\right) \sim (-1) \left(\begin{array}{ccc|c} -\frac{3}{4} & 1 & 0 & 0 \\ \frac{1}{4} & -\frac{2}{3} & \frac{1}{2} & 0 \end{array}\right)$$

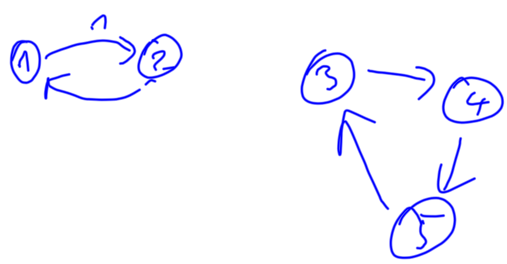
$x_1 = \frac{4}{3} \quad x_2 = 1 \quad x_3 = \frac{2}{3}$

$(4, 3, 2)$

$$\left(\frac{4}{9} \,\middle|\, \frac{3}{9} \,\middle|\, \frac{2}{9}\right)$$



5 9-11:30



5 9-11:48