

Fasit til ukeoppgaver med gjennomgang 29. mars

Ekstraoppgave 13

d)

$$P(t) = H \operatorname{diag}(e^{\lambda_1 t}, e^{\lambda_2 t}, e^{\lambda_3 t}) H^{-1}$$

e)

$$\begin{aligned} \lim_{t \rightarrow \infty} P(t) &= \lim_{t \rightarrow \infty} H \operatorname{diag}(e^0, e^{-2t}, e^{-4t}) H^{-1} = H \operatorname{diag}(1, 0, 0) H^{-1} \\ &= \begin{pmatrix} \frac{3}{8} & \frac{3}{8} & \frac{3}{8} \\ \frac{1}{2} & \frac{1}{2} & \frac{1}{2} \\ \frac{1}{8} & \frac{1}{8} & \frac{1}{8} \end{pmatrix} \end{aligned}$$

f) $\pi_1 = \frac{3}{8}, \pi_2 = \frac{1}{2}, \pi_3 = \frac{1}{8}$

Ekstraoppgave 15

a)

$$P = \begin{pmatrix} 0 & 0 & 0 & \dots & 0 & 0 & 1-p \\ 0 & 0 & 0 & \dots & 0 & 1-p & p \\ \vdots & \vdots & \vdots & \vdots & 1-p & p & 0 \\ \vdots & \vdots & \vdots & & & & \vdots \\ 0 & 0 & 1-p & p & 0 & \dots & \\ 0 & 1-p & p & 0 & 0 & \dots & \\ 1 & p & 0 & 0 & 0 & \dots & \end{pmatrix}$$

c)

$$r > \frac{(1-p)(p-\alpha)}{\alpha}$$