MS4328 Problem Sheet 9

1. Investigate whether the following switched linear systems are stabilisable, and if so, find a stabilising switching strategy.

   (a)
   $$A_1 = \begin{pmatrix} 0 & 1 \\ 2 & -1 \end{pmatrix} \qquad A_2 = \begin{pmatrix} -2 & 0 \\ 0 & 0.2 \end{pmatrix}$$

   (b)
   $$A_1 = \begin{pmatrix} 0 & 1 \\ 2 & -1 \end{pmatrix} \qquad A_2 = \begin{pmatrix} 3 & 0 \\ 0 & -2 \end{pmatrix}$$

   (c)
   $$A_1 = \begin{pmatrix} 0 & 1 \\ 2 & 1 \end{pmatrix} \qquad A_2 = \begin{pmatrix} 5 & -4 \\ 6 & -5 \end{pmatrix}$$

   (d)
   $$A_1 = \begin{pmatrix} 0 & 1 \\ -4 & 0 \end{pmatrix} \qquad A_2 = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$$