

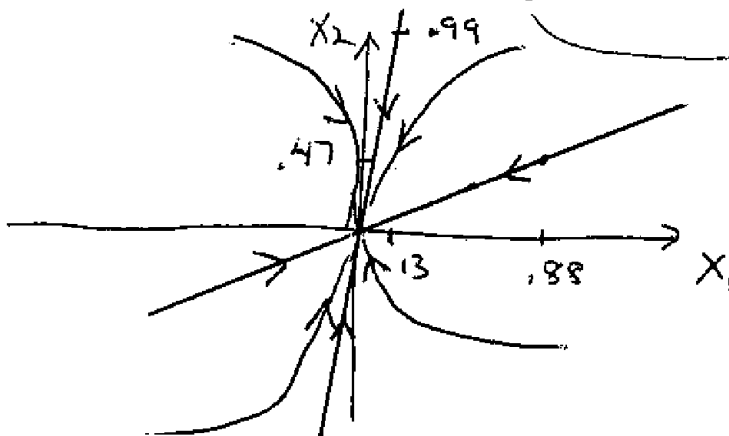
Practice Problem Solutions

Draw phase plane for

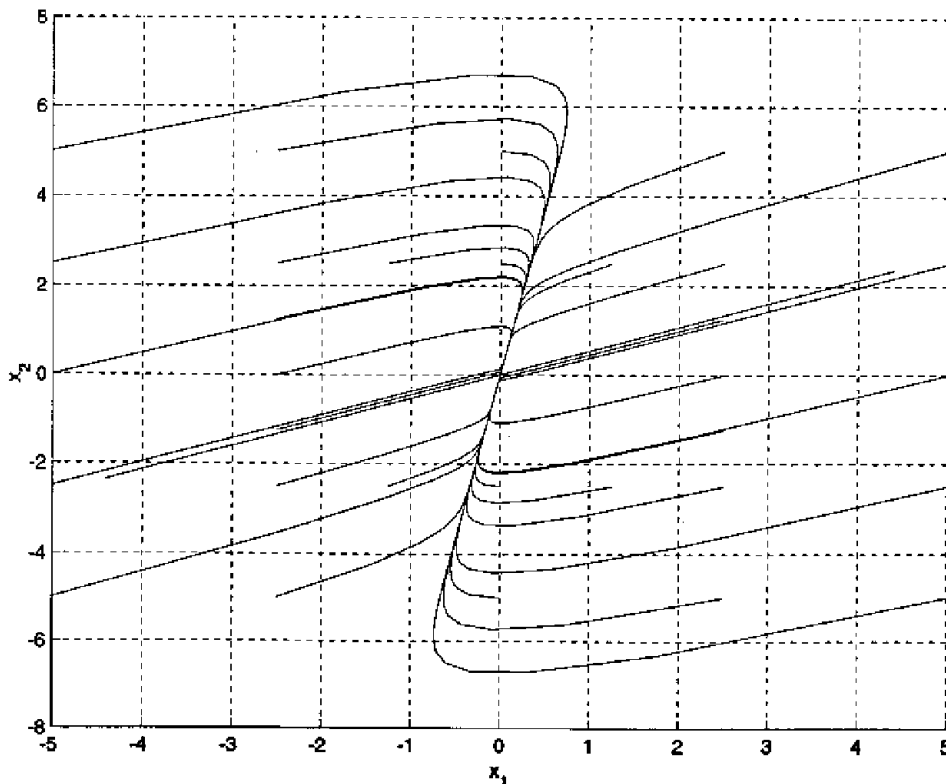
① $A = \begin{bmatrix} -8 & 1 \\ -4 & 0 \end{bmatrix}$ and ② $A = \begin{bmatrix} 2 & 1 \\ 4 & 0 \end{bmatrix}$

① eigenvalues are $(\lambda + 8)\lambda + 4 = 0$
 $\Rightarrow \lambda = -.536, -7.464$

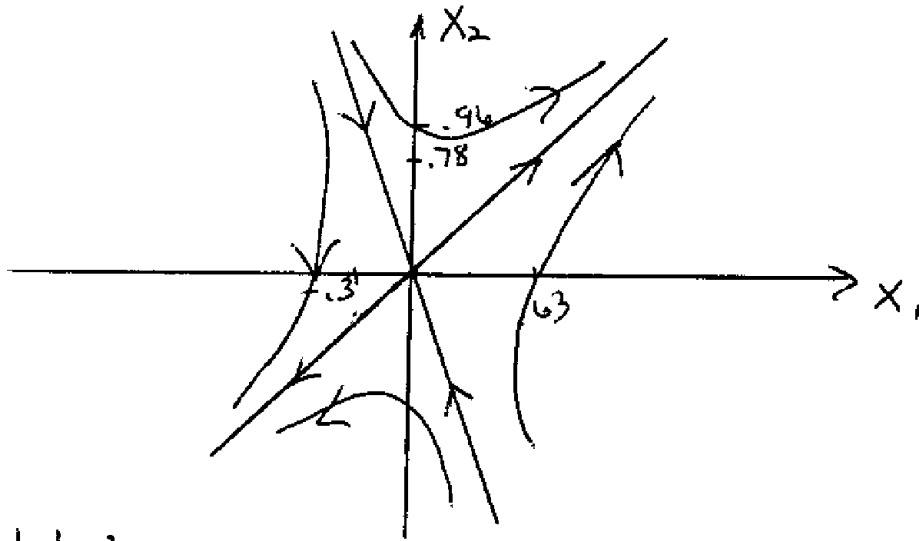
eigenvalues are $\begin{bmatrix} +.88 \\ +.47 \end{bmatrix}, \begin{bmatrix} +.13 \\ +.99 \end{bmatrix}$



from Matlab:



② eigenvalues are 3.24 and -1.24
 eigenvectors are $\begin{bmatrix} .63 \\ .78 \end{bmatrix}$, $\begin{bmatrix} -.30 \\ .96 \end{bmatrix}$



from Matlab:

