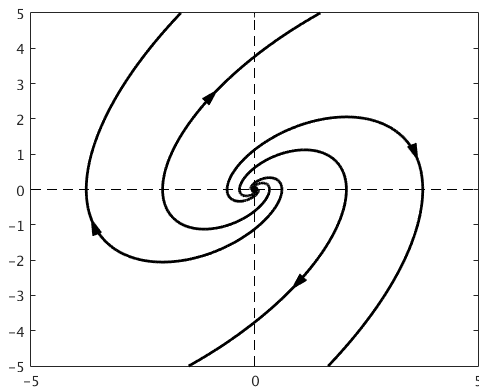


6. [12 points] Consider the system of equations

$$\begin{aligned}x_1' &= x_2 \\x_2' &= -x_1 + \alpha x_2,\end{aligned}$$

where α is a real-valued constant. For each of the phase portraits shown below, indicate all values for α that could result in this system having a phase portrait of that type and with the indicated stability. If it is not possible, write “**not possible**” and give a short explanation why.

a. [6 points]



b. [6 points]

