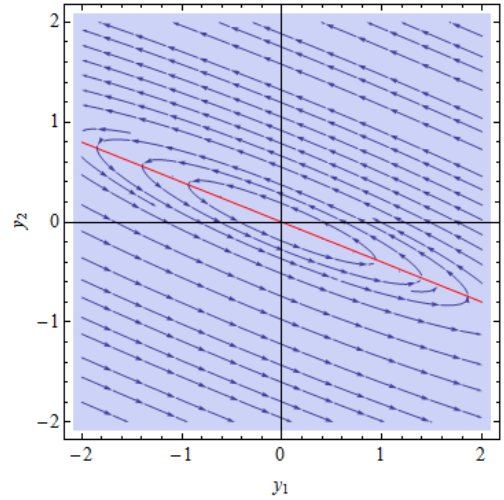
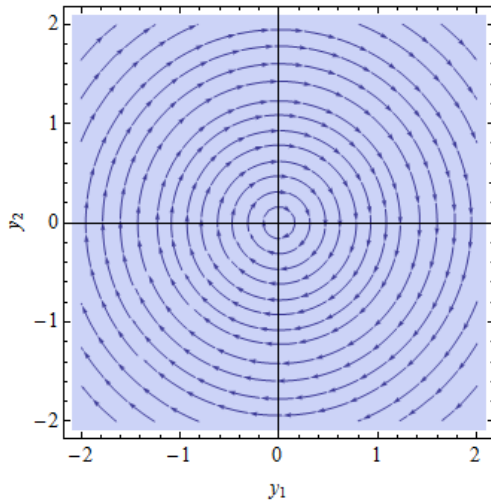
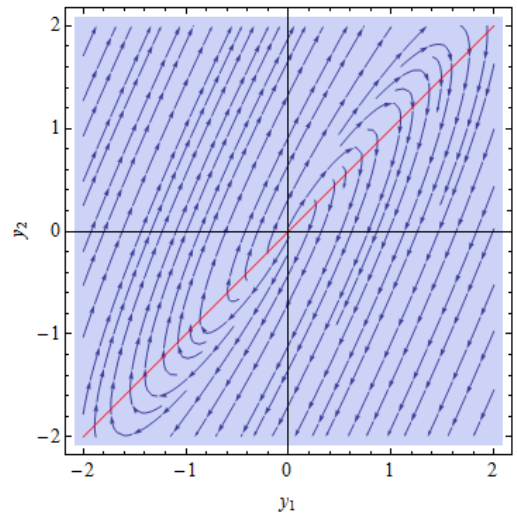
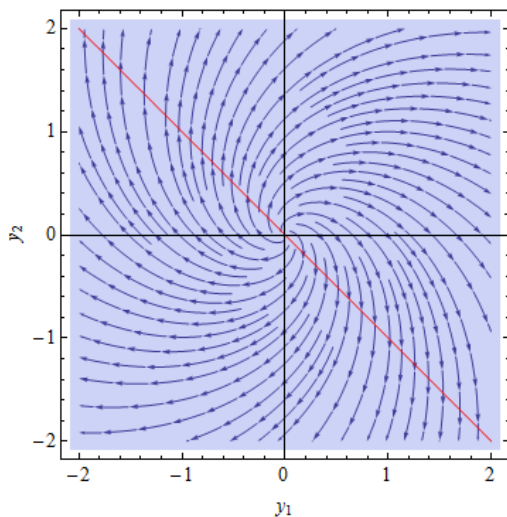


EXAMPLES OF PHASE DIAGRAMS OF TYPE III: $\lambda_1 = \alpha + i\beta$ and $\lambda_2 = \alpha - i\beta$ with α, β real and $\beta > 0$

1. Centre: $\alpha = 0$. Example: $A = \begin{pmatrix} -2 & -5 \\ 1 & 2 \end{pmatrix}$; $\lambda_1 = i = -\lambda_2$; The red line is $x_2 = -2x_1/5$, where trajectories become vertical.



2. Unstable focus: $\alpha > 0$. Example: $A = \begin{pmatrix} 2 & 2 \\ -5 & 4 \end{pmatrix}$; $\lambda_1 = 1 + i$, $\lambda_2 = 1 - i$; The red lines are $y_2 = -y_1$ and $x_2 = x_1$ where the trajectories become vertical.



3. Stable focus: $\alpha < 0$. Example: $A = \begin{pmatrix} 2 & 2 \\ -5 & 4 \end{pmatrix}$; $\lambda_1 = -1 + i$, $\lambda_2 = -1 - i$; The red lines are $y_2 = y_1$ and $x_2 = -x_1$ where the trajectories become vertical.

