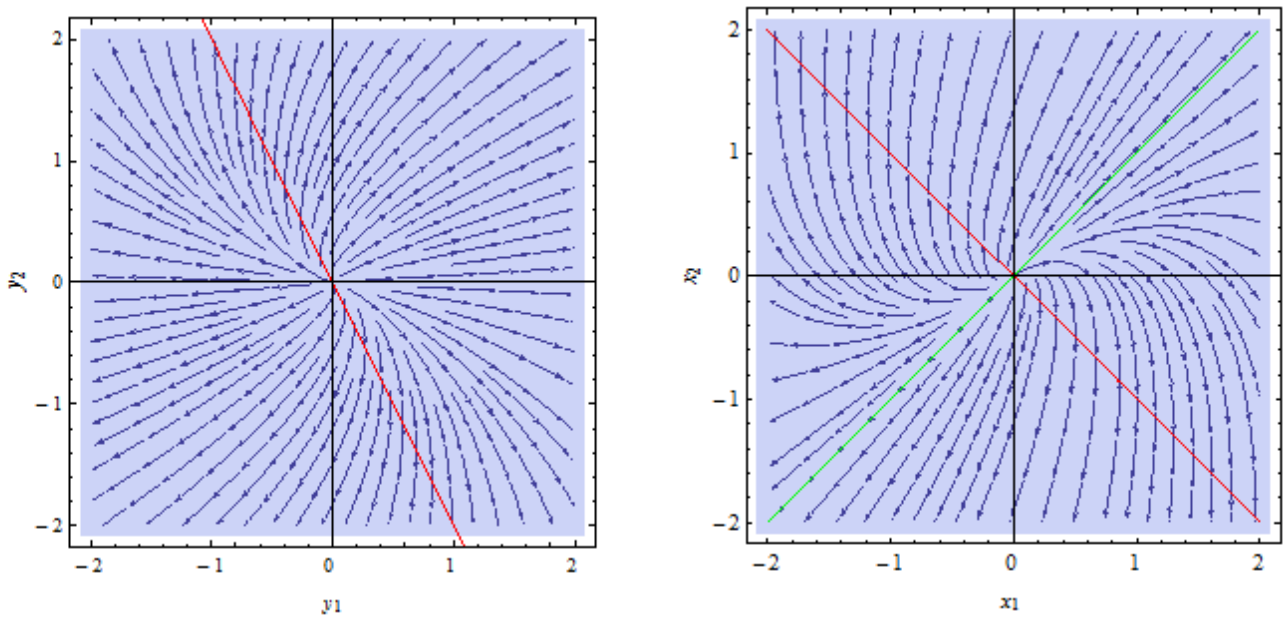
EXAMPLES OF PHASE DIAGRAMS OF TYPE II: $\lambda_1 = \lambda_2$ real and non-zero

1. **Unstable improper node:** $\lambda_1 = \lambda_2 > 0$. **Example:** A= $\begin{pmatrix} 1 & 1 \\ -1 & 3 \end{pmatrix}$; $\lambda_1 = 2$; $\underline{E}_1 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$ $(green)$

   The red lines are $y_2 = -2\,y_1$ and $x_2 = -x_1$ **where the trajectories become vertical.**



2. **Stable improper node:** $\lambda_1 = \lambda_2 < 0$. **Example:** A= $\begin{pmatrix} -1 & 1 \\ -1 & -3 \end{pmatrix}$; $\lambda_1 = -2$; $\underline{E}_1 = \begin{pmatrix} -1 \\ 1 \end{pmatrix}$ $(green)$

   The red lines are $y_2 = 2\,y_1$ and $x_2 = x_1$ **where the trajectories become vertical.**