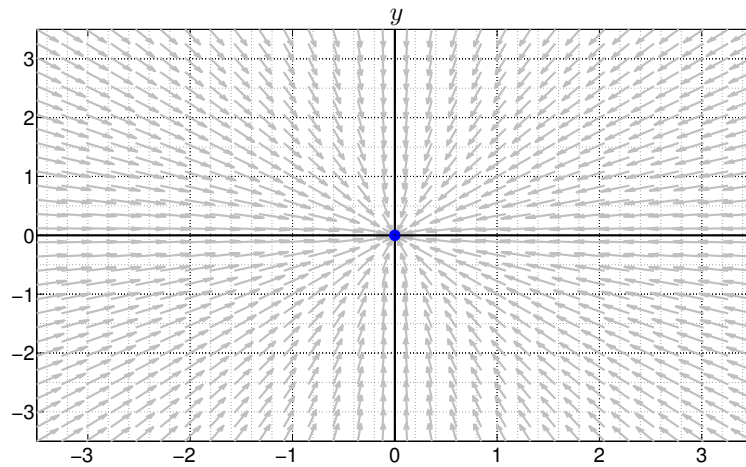


§3.5 (PART 1): STABILITY - REPEATED EIGENVALUES



Consider the system:

$$\frac{d\mathbf{y}}{dt} = \begin{bmatrix} -2 & 0 \\ 0 & -2 \end{bmatrix} \mathbf{y}$$

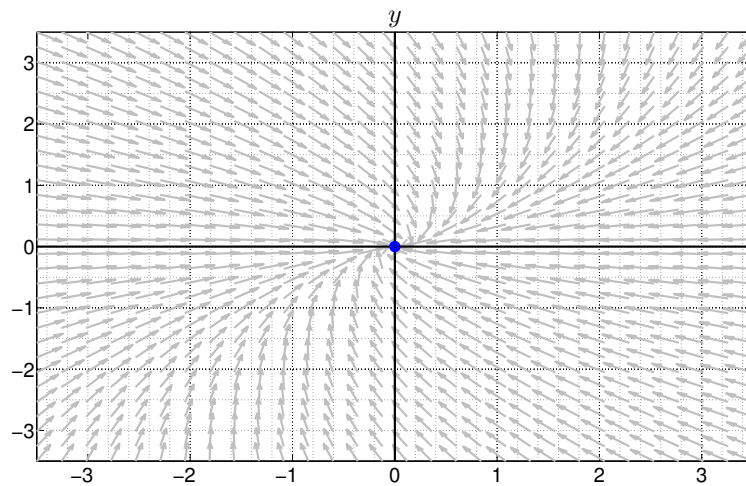
Eigenvalues:

Eigenvectors:

Gen. Sol. :

$$x(t) =$$

$$y(t) =$$



Consider the system:

$$\frac{d\mathbf{y}}{dt} = \begin{bmatrix} -2 & 1 \\ 0 & -2 \end{bmatrix} \mathbf{y}$$

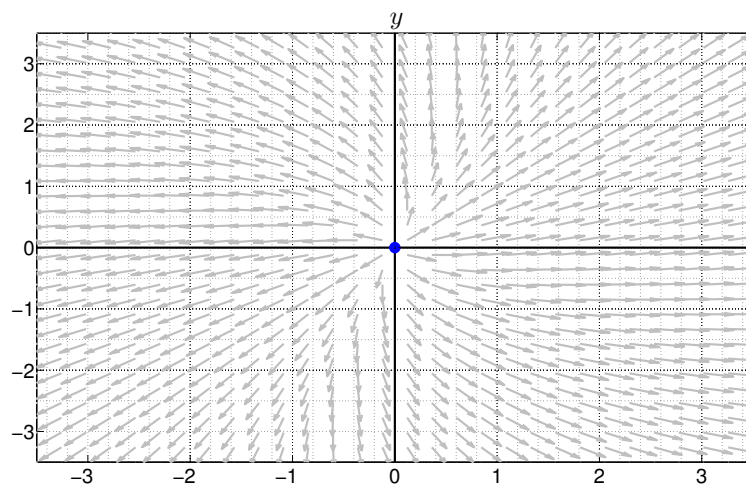
Eigenvalues:

Eigenvectors:

Gen. Sol. :

$$x(t) =$$

$$y(t) =$$



Consider the system:

$$\frac{d\mathbf{y}}{dt} = \begin{bmatrix} 5 & -1 \\ 1 & 3 \end{bmatrix} \mathbf{y}$$

Eigenvalues:

Eigenvectors:

Gen. Sol. :

$$x(t) =$$

$$y(t) =$$

Find the unique solution to the following IVP:

$$\frac{d\mathbf{y}}{dt} = \begin{bmatrix} -2 & -1 \\ 1 & -4 \end{bmatrix} \mathbf{y}, \quad \mathbf{y}(0) = \begin{bmatrix} 1 \\ 0 \end{bmatrix}.$$