

Problems Day 54, M 4/29/2024
Topic 27: Linear phase portraits (day 1)
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Problem 1. Suppose A has eigenpairs

$$\begin{aligned}\lambda &= -3 & -1 \\ \mathbf{v} &= \begin{bmatrix} 3 \\ 1 \end{bmatrix} & \begin{bmatrix} -1 \\ 1 \end{bmatrix}\end{aligned}$$

Sketch a phase portrait of the system $\mathbf{x}' = A\mathbf{x}$. Name the type of critical point at the origin and give its stability.

Problem 2. Suppose A has eigenpairs

$$\begin{aligned}\lambda &= -3 & 2 \\ \mathbf{v} &= \begin{bmatrix} 3 \\ 1 \end{bmatrix} & \begin{bmatrix} -1 \\ 1 \end{bmatrix}\end{aligned}$$

Sketch a phase portrait of the system $\mathbf{x}' = A\mathbf{x}$. Name the type of critical point at the origin and give its stability.

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ES.1803 Differential Equations

Spring 2024

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