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MAT 330: Prof. Sharma

MOD 5-3

In the Module Five MATLAB Assignment, I analyzed a system of differential equations using a phase portrait to study the behavior of eigenvectors. Using MATLAB, I plotted the phase portrait and observed how the trajectories of the system evolve over time. For the initial condition x1(0)=0.5, x2​(0)=0.3, the trajectory curved inward and approached the origin as t→∞. This result is consistent with the phase portrait, which showed that all trajectories were curving toward and around the origin, indicating a stable spiral point. Given the nature of the eigenvalues (likely complex with negative real parts), this result made sense in the context of the problem.

Reflecting on my progress in the course, I have found the study of eigenvalues and eigenvectors particularly interesting, especially how they influence the dynamics of systems of differential equations. Understanding how a system's behavior can be predicted just by analyzing its matrix properties has been fascinating. On the other hand, the section on circuits posed more of a challenge. Applying differential equations to physical systems like RLC circuits required careful translation into practical modeling, which was pretty hard for me. Working through the MATLAB assignments has helped me better visualize and comprehend these abstract concepts, and I feel more confident in my ability to solve those types of equations but I still struggled through that part of this course.