

Applied Data Analysis and Tools Systems of Linear ODEs Homework

Use MATLAB to answer the following question. Copy and paste your session from the MATLAB Command Window into a text file to submit on Canvas.

1. Consider the following system of differential equations and initial conditions.

$$\begin{cases} y_1(t)' = -1.4 y_1(t) - 0.2 y_2(t) \\ y_2(t)' = -1.2 y_1(t) - 1.6 y_2(t) \end{cases}, \quad \begin{cases} y_1(0) = 1 \\ y_2(0) = 0 \end{cases}$$

- (a) Express the system of ODEs in matrix form. Use MATLAB to find the eigenvalues and eigenvectors. What is the solution to the systems of ODEs?
- (b) What will the system do when t becomes large?