Math 308 Quiz 11

Friday, April 26, 2024

Name: _____ **UIN:** _____

Directions: Turn in your work at the end of class. You may discuss in groups but please submit your own work.

1. Using the eigenvalue method, solve the initial value problem. Leave your solution in real-valued form.

   (a) (5 points)

   $$x_1' = x_2, \;\; x_2' = -13x_1 - 4x_2, \qquad x_1(0) = 1, \;\; x_2(0) = 0.$$

   (b) (5 points) Classify the linear system from part (a) and sketch a phase portrait.

2. (10 points) Solve the initial value problem

$$x_1' = x_2, \quad x_2' = -x_1 + 2x_2 + 3e^t, \qquad x_1(0) = 1, \;\; x_2(0) = 0.$$

Scratch paper