HOMEWORK 25
DIFFERENTIAL EQUATIONS
DUE 11-05

Show your work!

(1) Consider the system of constant-coefficient, homogeneous differential equations with coefficient matrix $A = \begin{pmatrix} 2 & 1 \\ -1 & 4 \end{pmatrix}$.
   (a) What is the single eigenvalue λ of the coefficient matrix?
   (b) Find a corresponding eigenvector V.
   (c) Let $W = \begin{pmatrix} a \\ b \end{pmatrix}$ be a constant vector. Under what conditions on a and b is $Y = Ve^{\lambda t} + Wte^{\lambda t}$ a solution of the system of differential equations?

- **Three** book problems: #3.6.29, 34, 35.