Problem Set 5   Differential Equations   Due 4/12/06

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each natural numbered problem is worth 5 points. For full credit indicate clearly how you reached your answer. All work must be legible and submitted on clean paper without ragged edges.

For each of the following systems, classify the equilibrium, find the general solution, and find a particular solution subject to the initial condition. You're encouraged to check your work graphically and/or algebraically to make sure it's accurate.

1. $\dfrac{d\mathbf{Y}}{dt} = \begin{pmatrix} 0 & -1 \\ 2 & 0 \end{pmatrix} \mathbf{Y}$ with $\mathbf{Y}_0 = (1,0)$.

2. $\dfrac{d\mathbf{Y}}{dt} = \begin{pmatrix} 2 & -1 \\ 2 & 0 \end{pmatrix} \mathbf{Y}$ with $\mathbf{Y}_0 = (1,1)$.