Differential Equations - Homework 33

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Office Hours:

Homework 33

Directions: Do the following book problems

Section 6.3 Problems 4-7 and 11-13.
Section 6.4 Problems 5, 6, 7

Please also finish your solutions to the in-class activity - these don't need to be handed in.

Other Notes:

1. Notice that problems 4-7 and 11-3 are each grouped together. Each set walks you through the analysis of a predator prey system. See if you can interpret your results in terms of an ecological application.
2. Remember that linearization = find the Jacobian and plug in fixed points, the book then writes down the associated linear system.
3. The book makes some nice distinctions about whether or not our Jacobian analysis will work. This all depends on if we really can linearize the system. To us this means that the higher order terms (HOT) really do become negligible as we zoom into the fixed point. The true theory of nonlinear systems takes much more analysis than what we can do in this class - but you should think about taking courses in Nonlinear Dynamics and Chaos!