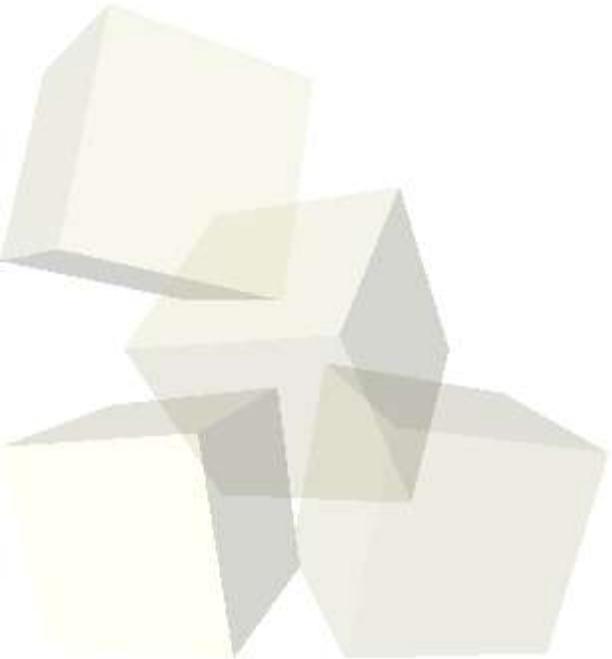
More Differential Equations

9-28-2005

Opening Discussion

- What did we talk about last class?
- Let's try to make a final decision about the project problem that you want to do before the end of class today.

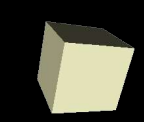


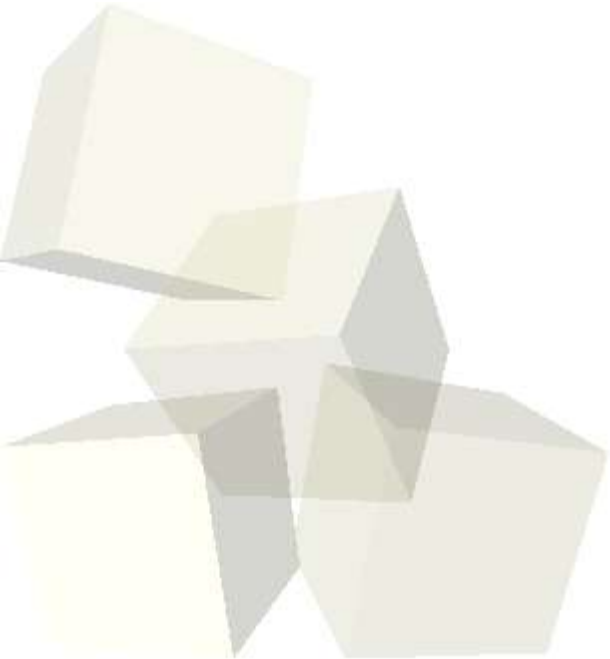
Using the ode Functions

- In order to use ode45 of other ODE solving functions, we must define our function in an m-file because we want to pass a handle to it into the ode function. This function should return the derivatives as a column vector.
- If we don't use any return values the function will simply show a plot. A single return value returns a structure. Having two return values gives us the times as well as the arrays of values at each time. That can then be plotted as we see fit.

Examples

- ODEs abound in physics. The simplest ones involve solving the paths of particles interacting through a force like gravity or having masses on springs.
- Population biology can also be expressed as differential equations. Consider things like predator-prey models where how quickly a population changes depends on how much food it has, how many there are now, and how many predators there are.



Reminders

- Assignment #5 is due on Monday.