Applied Mathematics I
Worksheet #1

September 3 - Professor Broughton

Name:_____ Box #:_____

1. Setting Up Equations

For each of the situations below write out an equation or set of equations that describe(s) the situation. De…ne all the quantities used. Say what type of equations you get - algebraic or di¤erential, scalar or system, linear or non-linear. If you know how to solve the equations, go ahead.

1. Jack is four years older than twice Jill's age. Jill is two years younger than half Jack's age.

2. A certain biological species has a rate of growth that is proportional to the total population. They are harvested at a constant rate.

3. The market shares of two companies Widgets Inc. and Gadgets Galore are in equilibrium. Each month Widgets Inc. manages to retain 90% of its customers and Gadgets Galore retains 20% of its customers. The lost customers go to the other company.

4. A ship is at sea in coastal waters. The radar ranges from three objects are read out. The distances north and east of a reference object are also known:

	north	east	radar range
Hard Rock	5.2	-2.4	4.5
Bright Light	8.3	3.8	2.9
Sharpe Point	4.5	3.6	2.2