Homework Assignment 24: Due at the beginning of class 5/3/02.

This homework assignment consists of problems on finding symbolic solutions to differential equations using the technique of *Separation of Variables*. These problems are intended to help you to get used to performing the technique of *Separation of Variables*. There are no trick questions – all that you have to do in each problem is to find a formula for the function $y(t)$, given a differential equation and an initial condition.

1. **Differential Equation:** $y'(t) = \frac{1}{2} \cdot y(t)$.

Initial value: $y(0) = 5$.

2. **Differential Equation:** $y'(t) = 4 \cdot y(t)$.

Initial value: $y(0) = 64$.

3. **Differential Equation:** $y'(t) = \frac{1}{2} \cdot \left[y(t) - 1 \right]$.

Initial value: $y(0) = 9$.

4. **Differential Equation:** $y'(t) = 3 \cdot \left[1 - y(t) \right]$.

Initial value: $y(0) = 10$.

5. **Differential Equation:** $y'(t) = 2 \cdot y(t) - 8$.

Initial value: $y(0) = 7$.

REMEMBER: If you are not sure about your answer, you can always check it by seeing if the formula that you have derived satisfies both the differential equation and initial condition. (See the solutions to Homework 3 and 23 for examples of how to do this.)