HOMEWORK 11
DIFFERENTIAL EQUATIONS
DUE 09-26

Show your work!

(1) According to Newton's law of cooling, an object cools at a rate proportional to the difference between its temperature and the ambient temperature.

Suppose that a cup filled with boiling tea (212 °F) is placed outside at 8 AM on a freezing morning (32 °F), and cools according to Newton's law. Further, the temperature outside increases at a constant rate to 40 °F at 9 AM.

At 8:30 AM, the temperature of the tea is 98 °F. What is its temperature at 9 AM? (HINT: First set up a differential equation modelling the temperature T (in °F) of the tea at time t (in hours) after 8 AM.)

(2) **Four** book problems: #1.4.15; #1.9.3, 10, 12.