Homework 12

Important Remarks

- Homework is due on October 10, 2014 at the beginning of class.

1. Problem 5.3

2. Problem 5.37

Note: I'm including formulas you could use to solve Problem 5.37. (If this does not make sense to you, change the voltage source to the following: $v_s(t) = 3 - 3u(t)$).

The solution of a first-order differential equation with constant coefficients:

$$\frac{dx}{dt} + ax(t) = f(t)$$

is given by

$$x(t) = e^{-at} \int e^{at} f(t) + Ae^{-at}$$

In particular, for

$$\frac{dx}{dt} + ax(t) = b$$

the solution is given by:

$$x(t) = \frac{b}{a} + Ae^{-at}$$

where the constant A is determined from a boundary condition (in our case by the initial conditions).