Problem Set 3 Day 4 Questions

1. The local supermarket buys lettuce each day to ensure really fresh produce. Each morning any lettuce that is left from the previous day is sold to a dealer that it resells to farmers who use it to feed their animals. This week the supermarket can buy fresh lettuce for $4.00 a box. The lettuce is sold for $10.00 a box and the dealer that sells old lettuce is willing to pay $1.50 a box. Past history says that tomorrows demand for lettuce averages 250 boxes with a standard deviation of 34 boxes. How many boxes of lettuce should the supermarket purchase tomorrow? (Assume that the demand is normally distributed.)

2. On a given Vancouver-Montreal flight there are 200 seats. Suppose the ticket price is $475 for each seat, and the number of passengers who reserve a seat but do not show up for departure is normally distributed with mean 30 and standard deviation 15. You decide to overbook the flight and estimate that the average loss from a passenger who will have to be "bumped" (if the number of passengers exceeds the number of seats) is $800 (in addition to refunding the original ticket price). What is the maximum number of reservations that should be accepted?

3. The publisher of the Vancouver Sun incurs $0.20 for each copy of newspaper it prints, and charges $0.75 to Safeway for each copy that Safeway purchases. Readers pay $1 to Safeway for each copy of the Vancouver Sun. Thus, the publisher and Safeway constitute a twotier supply chain. Suppose the daily demand for the Vancouver Sun at a Safeway store is normally distributed with mean 100 and standard deviation 30.

   (a) How many newspapers should Safeway purchase to maximize its own profit?
   (b) How many newspapers should Safeway keep so that the supply chains profit is maximized?