Problem 1: A certain orchard in Florida is such that when 12 orange trees are planted on each acre, the yield per tree is 60 bushels of oranges per tree. For each tree added to an acre, the yield per tree decreases by 2 bushels per tree. For example, if there are 13 trees planted on one acre, the yield per tree drops to 58 bushels per tree.

a. Write a complete model for the number of oranges produced on an acre in the orchard.

b. How many trees should be planted on an acre in the orchard to maximize the number of oranges produced on that acre? Show some work (i.e. calculus) to support your answer.

Problem 2: The weekly number of movie tickets that will be sold at a local theater is given by

\[ D(p) = 422.336(0.586^p) \]

hundred tickets, when the price of a ticket is \( p \) dollars.

a. Using the above model, find the complete model for revenue as a function of price, \( R(p) \).

b. Find the complete rate of change model revenue, \( R'(p) \).