

Project 2
November 20, 2002

Name _____
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In 1986, the state of California was trying to make a decision about raising the fee for a deer hunting license. Five hundred hunters were asked how much they would be willing to pay in excess of the current fee to hunt deer. The percentage of hunters to agree to a fee increase of x dollars is given by the logistic model

$$\text{Percentage} = \frac{1.221}{1 + 0.221e^{0.0116x}}.$$

Suppose that in 1986 the license fee was \$100, and 75,000 licenses were sold.

1. What was the hunting license revenue in 1986?
2. Suppose that in 1987 the fee increased to \$150
 - (a) What percentage of the 1986 hunters would buy another license?
 - (b) How many hunters is that?
 - (c) What would be the 1987 revenue?
3. If the fee increase for 1987 were x dollars, find formulas for the following: (Hint: You might repeat the previous problem with a fee of \$300 instead of \$150, thinking about what you did that was the same for both numbers, to aid yourself in coming up with these formulas.)
 - (a) The percentage of hunters willing to pay the new fee.
 - (b) The number of hunters willing to pay the new fee.
 - (c) The new fee.
 - (d) The 1987 revenue
4. What is the optimal license fee increase according to your model? the optimal license fee? the optimal number of hunters? the optimal revenue?