2CP Polynomial Applications WS

1. A farmer has 2400 ft of fencing and wants to fence off a rectangular field that borders a straight river. He does not need a fence along the river. What are the dimensions of the field of largest area that he can fence? (see diagram)

|  |  |  |
| --- | --- | --- |
| x=width | Length | Area |
| 0 |  |  |
| 200 |  |   |
| 400 |   |   |
| 600 |   |   |
| 800 |   |   |
| 1000 |   |   |

Write equations to model the Length and Area as a function of x. Graph the Area equation on your calculator.  Find the width that will allow the farmer to maximize its area.  What is the maximum area?

2. The average fuel (in gallons) consumed by individual vehicles in the United States from 1960 to 2000 is modeled by the cubic function $f\left(x\right)=0.025t^{3}-1.5t^{2}+18.25t+654$, where t is the number is years since 1960.

a. Use a graphing calculator to graph the equation. Sketch a graph, label the independent and dependent variables. What window (domain and range) did you choose and why?

b. During which years is the consumption of gas increasing? Decreasing?

c. During what year was the highest gas consumption? Lowest?