

## 5.6 - OPTIMIZATION - APPLICATIONS OF ABSOLUTE EXTREMA

I. Preliminary word problems MUST be done using CALCULUS! Trial and error methods will earn no credit.

**Example:** How would you divide a 10-inch line so that the product of the two lengths is a maximum?

II. Word Problems:

- a. Read through the problem, sketch a picture (and label) if possible.
- b. Define variables, create a function and find the domain.
- c. Find critical values
  - i. If only one, use second derivative test.
  - ii. If not the right one, test endpoints
- d. Answer the question posed in the problem. Don't forget units.

Example: (HW #19) A car rental agency rents 200 cars per day at a rate of \$30 per day. For each \$1 increase in rate, 5 fewer cars are rented. At what rate should the cars be rented to produce the maximum income?

HW 5.6 # 1 – 9 (odd), 21 – 25 (odd)