Extra Credit Opportunity

NAME:

Objective: Solve multivariate optimization problems using LaGrange Multipliers.

Part One: Section Summary Discussion Board Post

Create a presentation in PowerPoint, Prezi, Adobe Presentation, or any other computer-based software with which you feel comfortable, that summarizes the content of Section 7.4. Please save your presentation as a .pdf file so it is easily opened. In a few slides, summarize:

- Theorem One: Method of Lagrange Multipliers for Functions of Two Variables
- Key Steps of Method of Lagrange Multipliers
- Method of Lagrange Multipliers for Functions of Three Variables

Part Two: Example Problem

Solve the following problem on a sheet of paper and scan your solution in as a .pdf or picture file. Please be sure to state and label your variables. In your solution:

- Write the problem in the form given by Step One of the Lagrange Multipliers Method.
- State your function $F(x, y, \lambda)$ based on the parameters of the problem.
- Find the critical points of the multivariable function, F, by solving the appropriate system of partial derivatives.
- Find the optimal solution.

Problem Statement

A manufacturing company produces two models of an HDTV per week, x units of model A and y units of model B at a cost (in dollars) of

$$C(x, y) = 6x^2 + 12y^2$$

If it is necessary (because of shipping considerations) that

$$x + y = 90$$

How many of each type of set should be manufactured per week to minimize cost? What is the minimum cost?

Post both your presentation and example problem to the MyMathLab Discussion Board "Section 7.4 Summaries and Example Problem" by **11:59 PM CDT on Wednesday, July 26th**.

Part Three: Response and Feedback to Classmate

Evaluate another classmate's summary and example problem using the rubric that follows. In your response, be sure to state the Scoring Category, your score and a sentence or two explaining your score. Also include two strengths and one area of improvement. Please post your response to at least one classmate by **11:59 PM CDT on Thursday, July 27th**.

Section Summary Presentation and Example Problem
Evaluation Rubric

Scoring Category	**Exemplary (2)**	**Satisfactory (1)**	**Not Satisfactory (0)**
Statement of Problem	Problem is stated in correct form with function to be maximized/minimized clearly stated. Constraints to which objective function is subject are also stated clearly in correct form.	The statement does not indicate whether objective function is to be maximized or minimized. Constraint function is not stated in correct form.	The statement does not include an objective function to be maximized or minimized. The constraint is also not stated.
Statement of function $F(x, y, \lambda)$	The new function, $F(x, y, \lambda)$, is clearly stated in the correct form.	The new function, $F(x, y, \lambda)$, is either missing the objective function or the constraint.	The new function, $F(x, y, \lambda)$, is not stated.
Critical Points	The solution correctly solves all equations generated by the partial derivatives of $F(x, y, \lambda)$.	The solution sets up the system of equations generated by the partial derivatives of $F(x, y, \lambda)$. Some critical points are not found correctly.	The solution does not set up the system of equations generated by the partial derivatives of $F(x, y, \lambda)$. No critical points are found correctly.
Optimal Solution	The solution checks all critical points in the relevant function to determine the optimal solution. The optimal solution is interpreted correctly in the context of the problem.	The solution states the correct optimal solution. The optimal solution is not interpreted correctly in the context of the problem.	The solution is not stated correctly AND is not interpreted in the context of the problem.