Advanced Operations Management

Fall 2005, Professor Eckstein

Homework 2

Due Thursday, September 22

Show your work for all problems.

1. Problem 3 on page 125 of the text. Answer all parts (a)-(c).

2. Problem 1 on page 129 of the text. A brief explanation should suffice.

3. Problem 3 on page 129 of the text. You may assume it is sufficient to set

\[ \frac{\partial TC(q, M)}{\partial q} = 0 \quad \frac{\partial TC(q, M)}{\partial M} = 0 \]

to find the solution. What expressions do you find for \( q^* \) and \( M^* \)?

4. Consider the EOQ model with \( D = 1000 \) units/year, \( K = $450 \), and \( p = $50 \). Suppose the discount rate is \( r = .08 \), and the only holding costs are capital costs, that is, \( h = rp \) in the standard average cost model. Use Excel and Solver to determine the optimal order quantity using the present value model described in class. Compare this order quantity to the one arising from the standard EOQ formula — by what percentage do they differ? If you use the EOQ order quantity, by what percentage does the present value of your inventory policy differ from the true optimal present value?