NORTHEASTERN UNIVERSITY
Department of Mechanical and Industrial Engineering
Supply Chain Engineering **Prof. Gupta**
IE 7200 **Spring 2014 (Mondays)**

Homework No. 6
(Due: March 24, 2014)

Problem 1. TwoWheels, a bike manufacturer, has identified two customer segments; one that prefers a customized bike and is willing to pay a higher price and another that is willing to take a standardized bike but is more price sensitive. Assume that the cost of manufacturing either bike is $200. Demand from the customized segment has a demand relationship of $d_1 = 20{,}000 - 10p_1$ and demand from the price-sensitive segment is $d_2 = 40{,}000 - 30p_2$. What price should TwoWheels charge each segment if its goal is to maximize profits? What is the total profit? If TwoWheels were to charge a single price over both segments, what should it be? How much increase in profits does differential pricing provide?

Problem 2. Consider the bike manufacturer, TwoWheels, in problem 1. Now assume that a customized bike costs $300 to manufacture, whereas a standardized bike costs $200 to manufacture, with all the other data as in problem 1. What price should TwoWheels charge each segment if its goal is to maximize profits? What is the total profit? If TwoWheels were to charge a single price over both segments, what should it be? How much increase in profits does differential pricing provide?