

**Intermediate Microeconomic Analysis: Prof. West
Final Exam**

You have 120 minutes to complete this exam. Please show all work and write full explanations. The exam is worth 100 points. Points for each question are given in parentheses.

Part 1: Short Answer Questions (40 points)

1. **(10 points)** The Earned Income Tax Credit (EITC) is paid to low-income U.S. workers in proportion to their wage. What happens to hours worked as a result of the credit? Use a graph in your explanation.

2. **(10 points)** What is the relationship between diversifiable risk, nondiversifiable risk, and the risk premium? Explain.

3. **(10 points)** Under what conditions will a firm use resources efficiently? In your answer, make sure you clearly explain how you interpret “efficient.”

4. **(10 points)** For an individual the substitution effect of a change in the price of x on x equals -2 , and the change in x with respect to a change in income equals 5 . What can you say about the slope of this person's demand curve?

Part 2: Long Answer Questions (60 points)

1. (20 points) Two firms are the sole producers in a market with demand given by $P = 300 - 2Q$, where $Q = Q_1 + Q_2$.

Firm 1 has marginal cost given by $MC_1 = 20 + Q_1$

Firm 2 has marginal cost given by $MC_2 = 20 + Q_2$

How much will each firm produce and at what price? Solve for quantities and prices in **two different scenarios**, making sure you clearly state your assumptions for each scenario.

2. (20 points) Rockstar Airlines flies one route (New York to Los Angeles, of course). The demand for flights is given by $P = 500 - Q$. The cost of running each flight is \$30,000 plus \$80 per passenger.

a. (8 points) If Rockstar Airlines cannot distinguish among its customers, what price should it charge per person? How many people will be on each flight? What will be the airline's profit for each flight?

b. (12 points) You are Rockstar Airline's Vice President in charge of pricing strategy. One day you happen to be chatting with a flight attendant, who says:

You know, I and the other flight attendants have noticed that every Friday night, our red-eye flight from LA to New York is completely filled up by celebrities and...ahem...rock stars. Lady Gaga was even on last night's flight! But none of the other flights have so many celebrities.

Tomorrow you are scheduled to present your pricing strategy to the CEO and the rest of management, all of whom are well-versed in intermediate microeconomics. What would you tell them? How do you recommend your airline set prices? Set up an optimization problem and a graph that illustrate your plan, making sure you discuss the effect your new pricing plan would have on profit.

3. (20 points) Consider a firm that faces a price of labor equal to \$12 per unit per week and a price of capital equal to \$8 per unit per week. You may assume that both output and input markets are competitive, that the firm wants to minimize costs, and that the firm would like to produce $q = 3600$.

a. (10 points) If the firm's production function is given by $q = \min(2K, 3L)$, where q equals the number of units produced per week, K is the number of units of capital per week, and L is the number of units of labor per week, how much capital and labor will this firm employ per week? Show your work.

b. (10 points) If the firm's production function is instead given by $q = 2K + 3L$, how much capital and labor will this firm employ per week? Show your work.