

Test #1

Points for each problem are shown out of 100 points. Each subsection in a problem is weighted equally.

Please show the calculations used to arrive at your answers. Draw graphs neatly and label clearly. Round answers to the first decimal place if necessary.

A. (20 pts) Answer True, False, or Uncertain, and briefly explain your answer.

- (1) Average fixed cost curves are always downward sloping.
- (2) A subsidy on milk production will lower the price of milk and reduce the quantity of milk produced.
- (3) Suppose that supply is perfectly inelastic. If the demand curve shifts upward, then price will remain constant, but quantity will decrease.
- (4) In long-run equilibrium in a perfectly competitive market, consumer surplus is equal to zero.

B. (20 pts) Short answers.

- (1) Explain why production possibility frontiers are never concave.
- (2) What is the numerical value for income elasticity if the demand function is $Q = \frac{24I}{P}$ (where I = income, P = price, and Q = quantity demanded)?
- (3) Given a demand curve $Q_D = 10 - 2P$, when the price changes from 2 to 3, what is the associated change in consumer surplus? How much of that change is deadweight loss?
- (4) What should a firm do if it finds that currently it has $\frac{MP_L}{P_L} > \frac{MP_K}{P_K}$?

C. (10 pts) Oscar has the utility function $U = \min\left[\frac{G}{2}, B\right]$
where G = soccer goal nets and B = soccer balls.

(1) Draw two indifference curves for Oscar.

(2) If $P_G = 10$, $P_B = 20$, and Oscar's income is 40, how many soccer goal nets will Oscar buy?

D. (25 pts) Kim Industries produces paper clips using the following production function:

$$Q = 50K + 20L$$

Q = units of output, K = units of capital, and L = units of labor
Capital costs 80 a unit and labor costs 40 a unit. Q sells for 2 a unit.
The firm has no fixed costs.

(1) Graph an isoquant for Kim.

(2) Draw two isocost lines on the same graph.

(3) Write down the profit function for Kim.

(4) What is the marginal product of labor?

(5) How much labor should Kim buy?

E. (25 pts) The market for labor is characterized by $L_D = 2000 - 50w$ and $L_S = 450w - 500$
where L = number of workers and w = daily wage per worker.

(1) If a minimum daily wage is placed on the market of 10, what are the new wage and quantity?

(2) How many workers lose their jobs? What is their loss of surplus? Do workers as a group gain or lose from this minimum wage?

(3) If, instead of a minimum wage, a wage subsidy is placed on the market, how large would the subsidy have to be in order to raise the workers' wage to 10?

(4) How much does the wage subsidy cost the government per day?

(5) If you want to make workers better off, which of these two policies do you prefer, a minimum wage or a wage subsidy? Explain your choice.