First Exam

Write all answers in your blue book and show all work there. Return your exam in your blue book.

18 pts.
1) Demand: \(Q_D = 120 - 5P\)
   Supply: \(Q_S = -30 + 3P\)
   a) Find the equilibrium price and quantity.
   b) If there is a $10 subsidy to either the buyer or seller, find the price to the buyer and the seller and quantity.
   c) Draw a well-labeled diagram of the functions in parts a and b.
   d) Would a subsidy of 15 dollars make the market price zero? Explain.

18 pts.
2) Jack’s opportunity cost of good A is 2 units of good B. Jill’s opportunity cost of good A is 3 units of good B.
   a) If they specialize and trade, who should produce good A?
   b) Will a price of 1 A per B make a mutually beneficial trade? Why?
   c) Suggest a price that will be mutually beneficial and explain why it is.

16 pts.
3) a) Sketch a well-labeled diagram showing a corner solution.
   b) Does your diagram have a concave indifference curve? Is a concave one necessary to give a corner solution? Explain.

16 pts.
4) If the \(MRS_E = -2\) and the \(MRS_C = MV = -1\) for goods X and Y, what can be done to increase utility?
   b) Draw a well-labeled diagram where the utility maximum is shown and show a point where too much X is being consumed. At this point, which good has more utility per dollar? Why?
16 pts.
5) a) If Profit = -10 + Q \cdot -1Q^2 , find the profit maximizing Q and use the second derivative to confirm that it is a maximum.

b) For a price cut, show in a well-labeled diagram of a demand curve, revenue that is lost and gained and relate these areas to the product rule.

16 pts.
6) In a two frame diagram,

a) Frame 1: show budget lines and indifference curves for a drop in price for good X, taking care to make the good a Giffen one.

b) Frame 2: show the compensated and uncompensated demand curves that match up with frame 1.

I have neither given nor received unfair aid on this test.

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