

Second Exam

Write all answers in your blue book and show all work there. Return your exam and printout(s) in your blue book.

20 pts.

1) Your firm produces 2 products, A and B, and uses 2 resources, R and T with production functions as follows: $A = \min(R/2, T/3)$ and $B = \min(R/5, T/4)$. You have fixed resources such that $R = 500$ and $T = 600$ and you have fixed prices and marginal costs such that $P_A = 10$, $P_B = 7$, $MC_A = 4$ and $MC_B = 2$. Find the most profitable way to use the resources.

20 pts.

2) Your firm currently employs 16 craftsmen at \$20 per hour for 40 hour weeks. They make a variety of products, one of which is B. Each unit of B requires one hour of labor, materials that cost \$10 and other variable resources that cost \$3. Another firm has offered to supply B to you for \$30 per unit, if a minimum of 400 units are purchased per week. A union contract prohibits you from laying off more than 2 workers. Should you take the deal?

20 pts.

3) Examine the diagram and data on page two.

a) Discuss how you would handle the data to fit curves if you were using regression techniques. Pay particular attention to the long versus the short run.

b) Use the gradient method to estimate estimate marginal cost when $Q = 20$. Be sure to specify any key assumptions that you make. (If you must ask me about this, do not speak loud enough for anyone to hear.)

40 pts.

4) If $Q_{\text{market}} = 100 - 2P$ and your firm's market share is .2.

a) Give the demand equation for your firm if your share is constant.

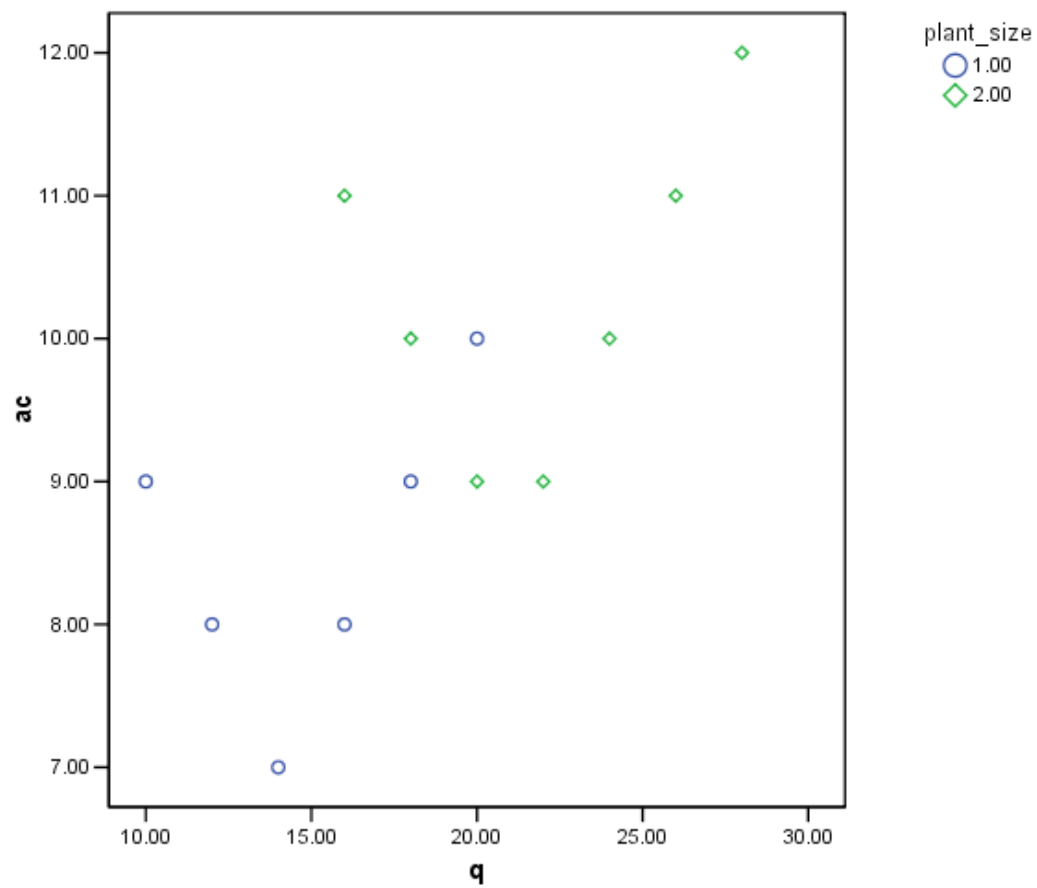
b) What assumption about pricing must be made to justify a constant share of the market.

c) Draw a demand curve for your firm assuming that the current price is 20 and that you are not the leader in your market.

d) Suppose that the leader has a 40 percent share and its MC is constant at \$10. Does this price maximize the leader's short run profit?

e) Suppose that the MES in your market is 13 and that the \$20 price is \$1 above AC at MES. Do you expect entry if demand elasticity is -2 ?

I have neither given nor received unfair aid on this test nor am I aware of anyone else who has.



q	ac	plant size
10.00	9.00	1.00
12.00	8.00	1.00
14.00	7.00	1.00
16.00	8.00	1.00
18.00	9.00	1.00
20.00	10.00	1.00
16.00	11.00	2.00
18.00	9.80	2.00
20.00	9.00	2.00
22.00	9.00	2.00
24.00	10.00	2.00
26.00	11.00	2.00
28.00	12.00	2.00