A. (8 pts.) Your niece, who dropped out of college and currently delivers sandwiches for Jimmy John's (earning $24,000 per year), approaches you for business advice. She has the opportunity to buy a craft brewery from a friend who wants to quit being the owner/manager, sell out, and go get an MBA so she can earn the big bucks. Annual sales revenues for the brewery are $240,000, and annual accounting costs are:

Ingredients (grains, hops, yeast, bottles, etc.)	$50,000	Explicit Costs:
Leased brewing and bottling equipment	$45,000	$206,000
Licenses, utilities, taxes	$36,000	
Hourly workers	$60,000	
Advertising	$15,000	

The sale of the brewery would include the building and land where the brewery is located, the brand name trademark and associated goodwill, and the customer list. The asking price is $100,000, which your niece would take out of her investment account where it has been averaging a 7% return. What is your advice? Hint: This is not a one-word answer. You should help her calculate the economic profitability of this venture.

Annual revenues and costs:
Total revenue = $240,000
Total explicit costs = $206,000
Accounting profits = $34,000
Implicit Costs:

　　Opportunity cost of her time = what she could earn in her next best alternative, $24,000 at JJ's.
　　Opportunity cost of her $100,000 = what she could earn if she kept in the mutual fund, $7,000.
Economic profit = Total Revenue – total explicit costs – total implicit costs = $3,000

If quits her job at JJ's and takes $100,000 out of savings to buy the brewery, she will have $3,000 more at the end of each year than if she stays in her current situation. Sounds like a good plan.
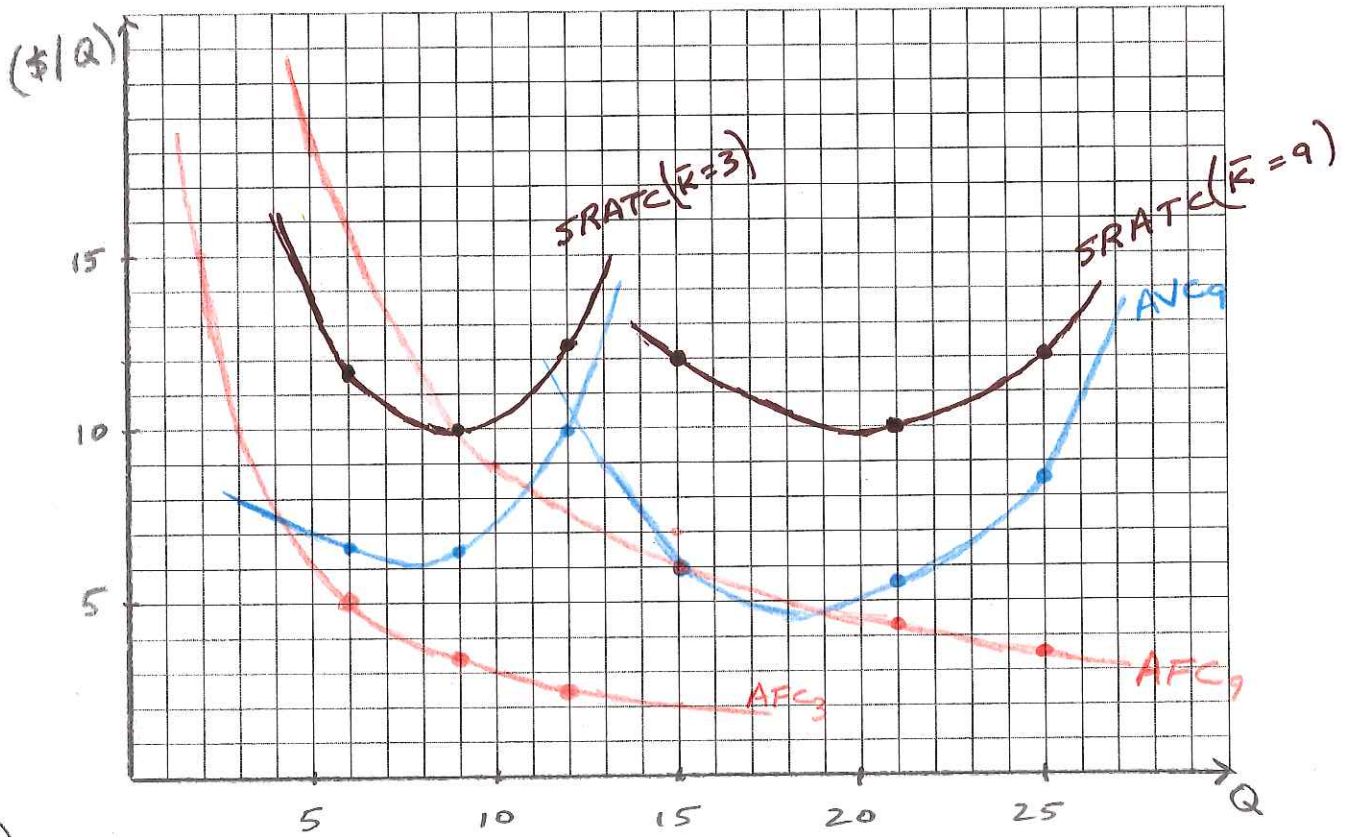
2. (12 pts.) A firm produces output (Q) using inputs labor (L) and capital (K). It can select from three different plant sizes corresponding to K=3, 6, and 9. When different amounts of L are combined with a fixed amount of K, output varies as follows:

K	3	3	3	6	6	6	9	9	9
L	4	6	12	6	8	17	9	12	21
Q	6	9	12	12	17	21	15	21	25

(a) If the per unit price of labor is $10 and the per unit price of capital is also $10, draw the SRAFC, SRAVC, and SRATC curves corresponding to K=3 and K=9. Show your calculations in a table and carefully label each point in your diagram.

(b) In a separate diagram, illustrate SRATC curves corresponding to K-3, K=6, and K=9, and then sketch the LRAC curve for this firm and explain whether it experiences economies or diseconomies of scale.

K	3	3	3	6	6	6	9	9	9
L	4	6	12	6	8	17	9	12	21
Q	6	9	12	12	17	21	15	21	25
TFC	30	30	30	60	60	60	90	90	90
TVC	40	60	120	60	80	170	90	120	210
TC	70	90	150	120	140	230	180	210	300
AFC	5	3.333333	2.5	5	3.529412	2.857143	6	4.285714	3.6
AVC	6.666667	6.666667	10	5	4.705882	8.095238	6	5.714286	8.4
ATC	11.66667	10	12.5	10	8.235294	10.95238	12	10	12

($/Q)

SRATC(K=3)

SRATC(K=9)

AVC9

AFC3

AFC9

15

10

5

5   10   15   20   25   Q

($/Q)

SRATC(K=3)

SRATC(K=6)

SRATC(K=9)

LRAC

LRAC

15

10

Economies
of scale

MES

Diseconomies
of scale

5

5   10   15   20   25   Q

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