Homework Problem #20
Costs and Competitive Market Supply

PRINT YOUR NAME _____
(LAST) (FIRST)

PART I: One Firm in the Short Run

A. The Fiasco Company is a perfectly competitive firm whose daily costs of production (including a "normal" rate of profit) in the short-run are as follows:

Fixed cost is $12 per day.

Output (Per day)	Variable Cost	Total Cost	Marginal Cost	Average Total Cost	Average Variable Cost
0	0	12.00	XXXX	XXXX	XXXX
			4.00		
1	4.00	16.00		16.00	4.00
			3.00		
2	7.00	19.00		9.50	3.50
			____		
3	9.00	21.00		7.00	3.00
			____		
4	13.00	25.00		____	3.25
			____		
5	19.00	____		____	____
			____		
6	27.00	____		____	____
			____		
7	37.00	____		____	5.29
			____		
8	49.00	____		7.63	6.13
			____		
9	63.00	____		8.33	____
			16.00		
10	79.00	91.00		9.10	____

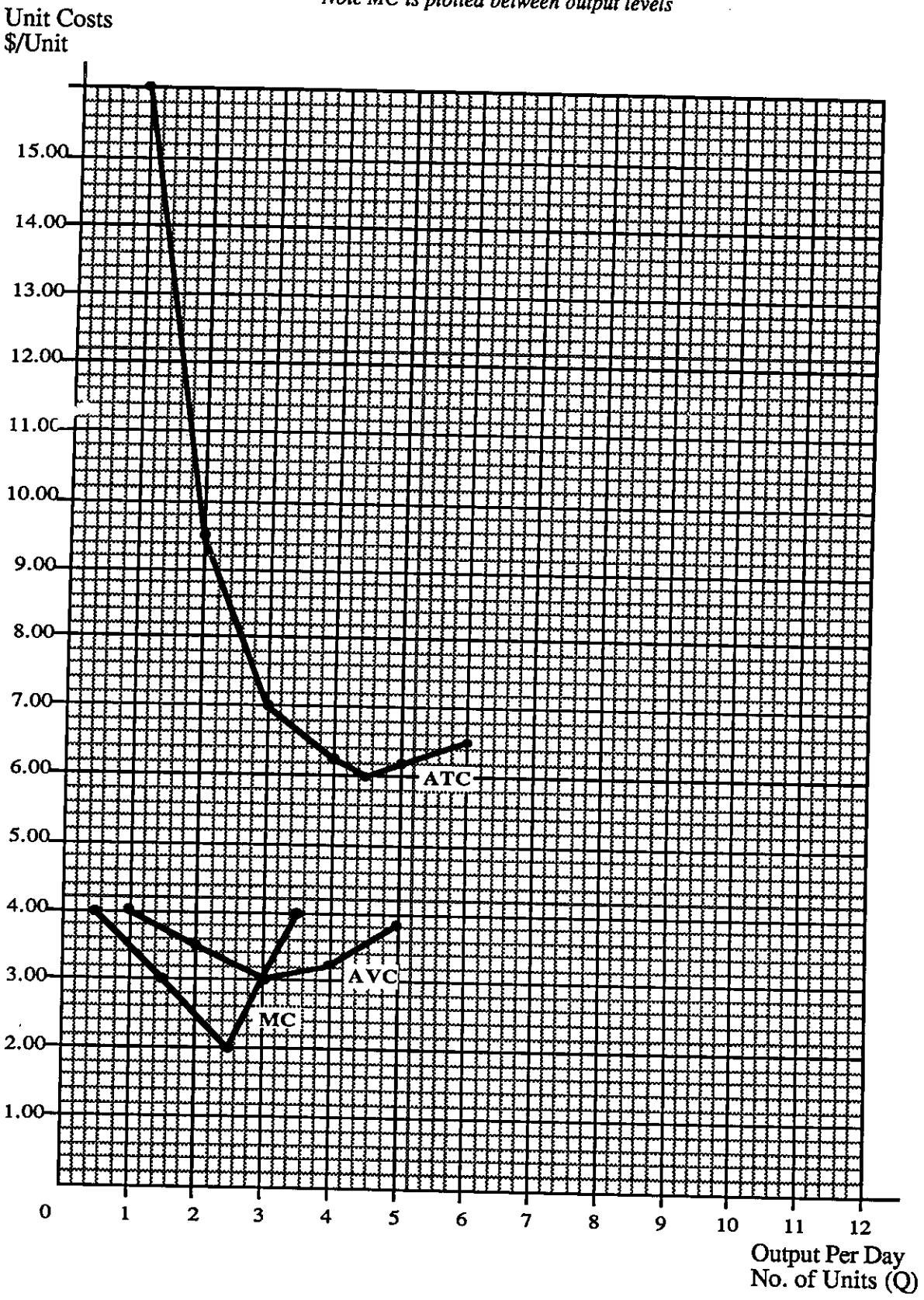
1. Fill in the blanks in the cost table above. Note that marginal cost is shown between levels of output.

2. On the graph on the next page plot and label the average variable cost (AVC), average total cost (ATC), and marginal cost (MC) curves. Assume that this firm can produce any fraction of output per day so that you connect the points to form continuous curves. **NOTE**: To be absolutely precise the marginal cost (MC) curve should be plotted mid-way between the output intervals (see helpful start on the graph). Also, you might want to read the discussion in Appendix I about continuous variables compared to discrete variables.

3. How would you interpret the vertical distance between the average total cost and average variable cost curves?

FIASCO'S COST CURVE
(FINISH PLOTTING AND LABEL THE OTHER END OF MC, ATC, AVC)

Note MC is plotted between output levels



Note: Each small square = $.20 on the vertical axis and .2 units of output on the horizontal axis. Half units of output are plotted midway between .4 units and .6 units.

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4. Why does average total cost decline at first, then start rising as output is increased?

5. The marginal cost curve intersects both average cost curves (ATC and AVC) at their minimum points. Why?

6. If fixed costs were $20 instead of $12, how would the change affect average variable costs and marginal costs?

B. Given the costs curves for Fiasco Corporation in Part A, and the fact that the competitive market price at which it must sell its output is $11 a unit, fill in the blanks below and draw the graphs for Part I. (Remember, fractions of units are allowed.)

1. Draw the average and marginal revenue curves on your graph above.

2. In order to maximize profits, Fiasco would sell _____ units, at a price of $_____. Its average total cost would be $_____. Its average revenue would be $_____. It would earn a per unit profit of $_____ and total profit of $_____ per day.

3. If the firm produced instead at the quantity which minimized its average total cost, it would sell _____ units at a price of $_____. Its average total cost would be $_____. Its average revenue would be $_____. It would earn a per unit profit of $_____ and total profit of $_____ per day.

4. If the competitive market price fell to $5 a unit, Fiasco would sell _____ units. Average total cost would be $_____. It would earn a per unit (profit/loss) of $_____, and a total (profit/loss) of $_____ per day.

PART II: Many Small Firms and the Long Run

A. The long-run cost conditions (including a "normal" rate of profit) for a perfectly competitive firm are as follows:

Output	Total Cost	Average Total Cost	Marginal Cost
1	9	9.00	
			4.00
2	13	6.50	
			5.00
3	18	____	
			6.00
4	24	____	
			____
5	31	6.20	
			____
6	39	____	
			____
7	48	6.86	
			____
8	58	____	
			____
9	69	7.67	
			____
10	81	8.10	

1. Fill in the blanks in the average total cost and marginal cost columns.

2. The level of output at which average total cost is at a minimum is _____ units. At this output average total cost is $_____.

3. What quantities would the firm be willing to supply at each of the following prices for its product? (NOTE: Strictly speaking the output decision of the firm under these conditions is ambiguous because for any of the price two levels of output yield the same profit. For instance, if price is $7/unit, the firm earns $4 profit whether it produces 4 or 5 units. For this exercise, assume the firm chooses the larger of the two output levels.)

Price	Quantity Supplied
$ 6	4
7	5
8	____
9	____
10	____
11	____
12	____

4. In general, the supply schedule (curve) of a perfectly competitive firm coincides with its _____ schedule (curve) in the range where _____ is rising and is greater than the _____.

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B. Suppose the firm in Part A is one of 1,000 firms currently operating in a competitive industry, all of which have identical cost functions.

The market demand for this industry is given below:

Price	Quantity Demanded	Quantity Supplied
$12	2,000	10,000
11	3,000	9,000
10	4,000	_____
9	5,000	_____
8	6,000	_____
7	7,000	_____
6	8,000	_____

1. Fill in the industry supply schedule in the table above.

2. Explain briefly how the short-run supply schedule (curve) of a competitive industry is derived.

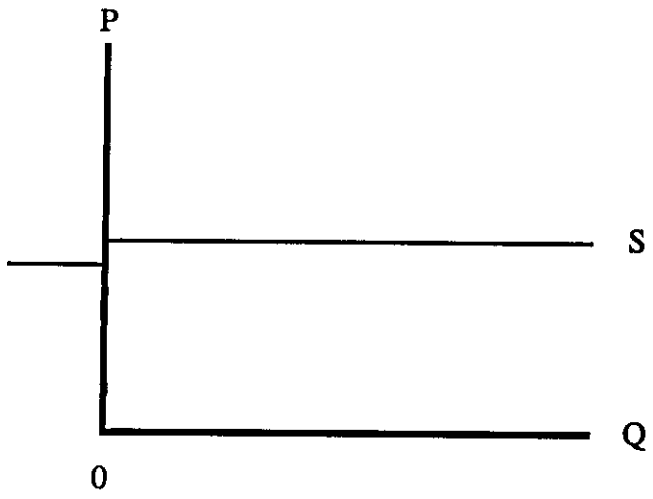
3. Given the present 1,000 firms in the industry, the present equilibrium price for the industry is $_____; the present equilibrium quantity is _____ units. At this price, each firm will be making (circle one): positive economic profit/zero economic profit/ negative economic profit (economic losses).

4. Given the equilibrium above, and assuring that other firms can enter the industry **with the same cost as the present firms**, the number of firms in the industry in the long run will tend to (increase/decrease/remain constant) and the price will tend to (increase/decrease/remain constant). The output of the industry will tend to (increase/decrease/remain constant), while output per firm will (increase/decrease/remain constant)

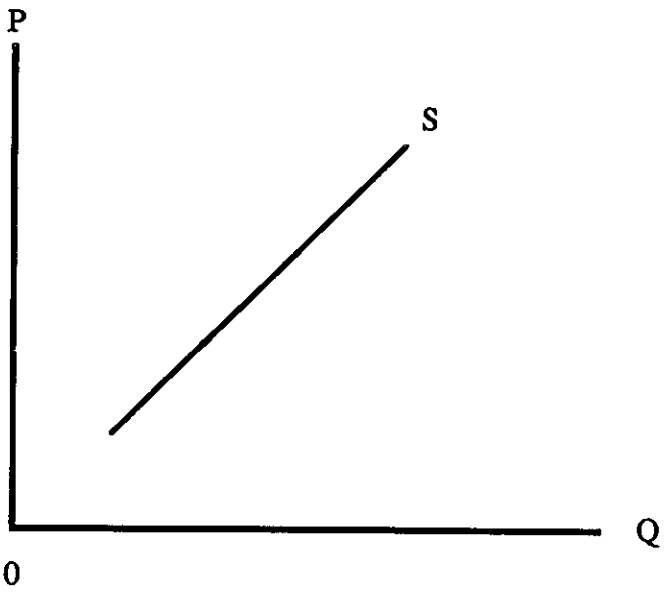
5. If this is a constant cost industry, (i.e., one where input prices don't change as the industry expands), the long run equilibrium price for the industry will be $_____; output per firm will be _____ units; there will be _____ firms in the industry each earning _____ economic profits; industry output will be _____ units. The equilibrium price coincides with the _____ per unit cost of production.

6. Can you see why, under the conditions described above, that the long run market supply curve for this industry would appear as a horizontal line on a graph? Explain.

At what price would this horizontal line be plotted?



7. What conditions in input markets would result in a long run product market supply curve that slopes up to the right? Explain.



8. Which of the curves (6 or 7) do you think is likely to be the most typical case in a real world competitive market? Why?