Economics 101
Spring 2001
Section 4 - Hallam
Quiz 9

1. Consider the following table which shows the minimum cost way to produce various levels of output for a firm. Assume that the price of output is $4.36. How much output should the firm produce? The prices of inputs are given by w_1 and w_2. Marginal cost is abbreviated as MC. APP_i is the average physical product of the ith input while MPP_i is the marginal physical product of the ith input. MRS represents the marginal rate of substitution.

x_1	x_2	w_1	w_2	Output	MC	APP_1	APP_2	MPP_1	MPP_2	MRS	w_2/w_1
10.196	11.370	60.00	28.00	365.0	3.75	35.797	32.102	15.977	7.456	-0.467	-0.467
10.903	11.924	60.00	28.00	380.0	3.96	34.854	31.869	15.118	7.055	-0.467	-0.467
11.000	12.000	60.00	28.00	382.0	4.00	34.727	31.833	15.000	7.000	-0.467	-0.467
11.397	12.311	60.00	28.00	390.0	4.13	34.220	31.679	14.517	6.775	-0.467	-0.467
12.018	12.798	60.00	28.00	402.0	4.36	33.449	31.411	13.762	6.422	-0.467	-0.467
13.020	13.584	60.00	28.00	420.0	4.78	32.257	30.920	12.543	5.853	-0.467	-0.467
15.705	15.687	60.00	28.00	460.0	6.46	29.291	29.323	9.278	4.330	-0.467	-0.467
15.864	15.813	60.00	28.00	462.0	6.60	29.122	29.217	9.084	4.239	-0.467	-0.467
16.027	15.940	60.00	28.00	464.0	6.75	28.951	29.109	8.886	4.147	-0.467	-0.467
16.540	16.342	60.00	28.00	470.0	7.26	28.417	28.761	8.263	3.856	-0.467	-0.467
17.493	17.089	60.00	28.00	480.0	8.44	27.440	28.089	7.104	3.315	-0.467	-0.467
17.702	17.253	60.00	28.00	482.0	8.76	27.228	27.937	6.848	3.196	-0.467	-0.467

   a. 380
   b. 382
   c. 402
   d. 460
   e. Cannot tell from the data

2. Consider the following table which shows cost and revenue data for a specific ***price setting*** firm. Y denotes output, FC denotes fixed cost, VC denotes variable cost, TC represents cost, AFC is average fixed cost, AVC is average variable cost, ATC is average total cost, and MC is marginal cost. TR is total revenue and MR is marginal revenue. How much output should the firm produce in the short run?

Y	FC	VC	C	AFC	AVC	ATC	MC	Price	TR	MR
0.00	100	0.00	100.00				100.00	100	0	100
1.00	100	91.00	191.00	100.00	91.00	191.00	83.00	98	98	95
2.00	100	168.00	268.00	50.00	84.00	134.00	72.00	95	190	90
3.00	100	237.00	337.00	33.33	79.00	112.33	67.00	93	278	85
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5.00	100	375.00	475.00	20.00	75.00	95.00	75.00	88	438	75
6.00	100	456.00	556.00	16.67	76.00	92.67	88.00	85	510	70
7.00	100	553.00	653.00	14.29	79.00	93.29	107.00	83	578	65
8.00	100	672.00	772.00	12.50	84.00	96.50	132.00	80	640	60
9.00	100	819.00	919.00	11.11	91.00	102.11	163.00	78	698	55
10.00	100	1000.00	1100.00	10.00	100.00	110.00	200.00	75	750	50

   a. 0
   b. 2
   c. 4
   d. 5
   e. 7

3. If the firm in problem 2 is a price setter, how much should it produce in the long run?
   a. 0
   b. 2
   c. 4
   d. 5
   e. 6

4. What is the shutdown rule for a firm in the short-run?
   a. In the short-run, if some fixed costs are not sunk, the firm should continue to produce if (Total Revenue (TR) + sunk fixed costs) > Total costs; otherwise, it should shut down.
   b. In the short-run, the firm should continue to produce if total revenue (TR) exceeds total costs (TC); otherwise, it should shut down.
   c. In the short-run, the firm should continue to produce if total revenue (TR) is less than total variable costs.
   d. In the short run, the firm should continue to produce as long as it covers fixed and variable costs, otherwise it should shut down.
   e. Both a and c are reasonable rules.

5. Consider a firm with the following cost function.

$$cost(y) = 49 + 30y + 0.25y^2$$

   Assume that in the long run, all costs are avoidable. Marginal cost is given by

$$MC(y) = 30 + 0.5y$$

   Average cost reaches its minimum at the point where it is equal to marginal cost.

   From a long-run perspective, what is the level of y at which average cost is minimized?
   a. 12
   b. 13.5
   c. 14
   d. 8.083
   e. $7\sqrt{2}$

6. For the firm in problem 5, how high does the price need to be for the firm to continue operating in the long run?
   a. 36
   b. 36.75
   c. 37
   d. 42
   e. 34.95

For questions 7-9, consider a firm (or industry) with the following demand, cost, and marginal cost functions:

$$q = D(p) = 23 - \frac{1}{2}p$$
$$C(q) = 5 + 10q + q^2$$
$$MC(q) = 10 + 2q$$

7. What is the inverse demand function?
   a. $q = 46 - 2p$
   b. $p = 23 - \frac{1}{2}q$
   c. $p = -23 + \frac{1}{2}q$
   d. $p = 46 - 2q$
   e. $p = 46 - \frac{1}{2}q$

8. What is marginal revenue function for this firm if it is a uniform pricing monopolist?
   a. $MR = 46 - 2q$
   b. $MR = 23 - \frac{1}{2}q$
   c. $MR = 23 - 4q$
   d. $MR = 23 - 2q$
   e. $MR = 46 - 4q$

9. How much output should the uniform pricing monopolist produce?
   a. 2
   b. 6
   c. 3
   d. 8
   e. 9

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Answer Key

Question	Correct Answer
1	c
2	d
3	a
4	a
5	c
6	c
7	d
8	e
9	b

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x_1	x_2	w_1	w_2	Output	MC	APP_1	APP_2	MPP_1	MPP_2	MRS	w_2/w_1
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   a. 380
   b. 382
   c. 402
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Question	Correct Answer
1	c
2	d
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4	a
5	c
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9.00	100	819.00	919.00	11.11	91.00	102.11	163.00	78	698	55
10.00	100	1000.00	1100.00	10.00	100.00	110.00	200.00	75	750	50

   a. 0
   b. 2
   c. 4
   d. 5
   e. 7

3. If the firm in problem 2 is a price setter, how much should it produce in the long run?
   a. 0
   b. 2
   c. 4
   d. 5
   e. 6

4. What is the shutdown rule for a firm in the short-run?
   a. In the short-run, if some fixed costs are not sunk, the firm should continue to produce if (Total Revenue (TR) + sunk fixed costs) > Total costs; otherwise, it should shut down.
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   a. 2
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Question	Correct Answer
1	c
2	d
3	a
4	a
5	c
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7	d
8	e
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9.00	100	819.00	919.00	11.11	91.00	102.11	163.00	78	698	55
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   b. 36.75
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   d. 42
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   a. $MR = 46 - 2q$
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   c. $MR = 23 - 4q$
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   e. $MR = 46 - 4q$

9. How much output should the uniform pricing monopolist produce?
   a. 2
   b. 6
   c. 3
   d. 8
   e. 9

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Answer Key

Question	Correct Answer
1	c
2	d
3	a
4	a
5	c
6	c
7	d
8	e
9	b

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1. Consider the following table which shows the minimum cost way to produce various levels of output for a firm. Assume that the price of output is $4.36. How much output should the firm produce? The prices of inputs are given by w_1 and w_2. Marginal cost is abbreviated as MC. APP_i is the average physical product of the ith input while MPP_i is the marginal physical product of the ith input. MRS represents the marginal rate of substitution.

x_1	x_2	w_1	w_2	Output	MC	APP_1	APP_2	MPP_1	MPP_2	MRS	w_2/w_1
10.196	11.370	60.00	28.00	365.0	3.75	35.797	32.102	15.977	7.456	-0.467	-0.467
10.903	11.924	60.00	28.00	380.0	3.96	34.854	31.869	15.118	7.055	-0.467	-0.467
11.000	12.000	60.00	28.00	382.0	4.00	34.727	31.833	15.000	7.000	-0.467	-0.467
11.397	12.311	60.00	28.00	390.0	4.13	34.220	31.679	14.517	6.775	-0.467	-0.467
12.018	12.798	60.00	28.00	402.0	4.36	33.449	31.411	13.762	6.422	-0.467	-0.467
13.020	13.584	60.00	28.00	420.0	4.78	32.257	30.920	12.543	5.853	-0.467	-0.467
15.705	15.687	60.00	28.00	460.0	6.46	29.291	29.323	9.278	4.330	-0.467	-0.467
15.864	15.813	60.00	28.00	462.0	6.60	29.122	29.217	9.084	4.239	-0.467	-0.467
16.027	15.940	60.00	28.00	464.0	6.75	28.951	29.109	8.886	4.147	-0.467	-0.467
16.540	16.342	60.00	28.00	470.0	7.26	28.417	28.761	8.263	3.856	-0.467	-0.467
17.493	17.089	60.00	28.00	480.0	8.44	27.440	28.089	7.104	3.315	-0.467	-0.467
17.702	17.253	60.00	28.00	482.0	8.76	27.228	27.937	6.848	3.196	-0.467	-0.467

   a. 380
   b. 382
   c. 402
   d. 460
   e. Cannot tell from the data

2. Consider the following table which shows cost and revenue data for a specific ***price setting*** firm. Y denotes output, FC denotes fixed cost, VC denotes variable cost, TC represents cost, AFC is average fixed cost, AVC is average variable cost, ATC is average total cost, and MC is marginal cost. TR is total revenue and MR is marginal revenue. How much output should the firm produce in the short run?

Y	FC	VC	C	AFC	AVC	ATC	MC	Price	TR	MR
0.00	100	0.00	100.00				100.00	100	0	100
1.00	100	91.00	191.00	100.00	91.00	191.00	83.00	98	98	95
2.00	100	168.00	268.00	50.00	84.00	134.00	72.00	95	190	90
3.00	100	237.00	337.00	33.33	79.00	112.33	67.00	93	278	85
4.00	100	304.00	404.00	25.00	76.00	101.00	68.00	90	360	80
5.00	100	375.00	475.00	20.00	75.00	95.00	75.00	88	438	75
6.00	100	456.00	556.00	16.67	76.00	92.67	88.00	85	510	70
7.00	100	553.00	653.00	14.29	79.00	93.29	107.00	83	578	65
8.00	100	672.00	772.00	12.50	84.00	96.50	132.00	80	640	60
9.00	100	819.00	919.00	11.11	91.00	102.11	163.00	78	698	55
10.00	100	1000.00	1100.00	10.00	100.00	110.00	200.00	75	750	50

   a. 0
   b. 2
   c. 4
   d. 5
   e. 7

3. If the firm in problem 2 is a price setter, how much should it produce in the long run?
   a. 0
   b. 2
   c. 4
   d. 5
   e. 6

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   a. In the short-run, if some fixed costs are not sunk, the firm should continue to produce if (Total Revenue (TR) + sunk fixed costs) > Total costs; otherwise, it should shut down.
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   Average cost reaches its minimum at the point where it is equal to marginal cost.

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   d. $MR = 23 - 2q$
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   a. 2
   b. 6
   c. 3
   d. 8
   e. 9

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Answer Key

Question	Correct Answer
1	c
2	d
3	a
4	a
5	c
6	c
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8	e
9	b

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Quiz 9

1. Consider the following table which shows the minimum cost way to produce various levels of output for a firm. Assume that the price of output is $4.36. How much output should the firm produce? The prices of inputs are given by w_1 and w_2. Marginal cost is abbreviated as MC. APP_i is the average physical product of the ith input while MPP_i is the marginal physical product of the ith input. MRS represents the marginal rate of substitution.

x_1	x_2	w_1	w_2	Output	MC	APP_1	APP_2	MPP_1	MPP_2	MRS	w_2/w_1
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Answer Key

Question	Correct Answer
1	c
2	d
3	a
4	a
5	c
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8	e
9	b

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Quiz 9

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Quiz 9
Answer Key

Question	Correct Answer
1	c
2	d
3	a
4	a
5	c
6	c
7	d
8	e
9	b