

Economics 101
Spring 2000
Section 4 - Hallam
Final Exam
Version E - Blue

1. Marginal revenue measures
 - a. the change in cost required to produce one more unit of output.
 - b. the change in output that can be obtained from one more dollar of expenditure.
 - c. the level of output divided by the level of input.
 - d. the change in revenue from the production of one more unit of output.
 - e. the change in output that results from one more unit of an input.

2. Marginal cost measures
 - a. the change in an input required to produce one more unit of output.
 - b. the change in output that can be obtained from one more dollar of expenditure.
 - c. the change in cost from the production of one more unit of output.
 - d. the change in output that results from one more unit of an input.
 - e. the level of output divided by the level of input.

3. Average physical product measures
 - a. the change in cost required to produce one more unit of output.
 - b. the change in output that can be obtained from one more dollar of expenditure.
 - c. the change in output that results from one more unit of an input.
 - d. the change in revenue from the production of one more unit of output.
 - e. the level of output divided by the level of input.

4. The price elasticity of demand measures
 - a. the percentage change in the quantity demanded of a product when the price of a substitute product changes.
 - b. the additional product produced from one more unit of an input.
 - c. the amount of one good that must be given up to acquire more of another good while holding total utility constant.
 - d. the percentage change in the quantity demanded of a product when its own price changes.
 - e. The percentage change in output that occurs with an increase in expenditure.

5. The marginal rate of substitution (in consumption) measures
 - a. the percentage change in the quantity demanded of a product when the price of a substitute product changes.
 - b. the additional product produced from one more unit of an input.
 - c. the amount of one good that must be given up to acquire more of another good while holding total utility constant.
 - d. the additional utility from consuming one more unit of a product.
 - e. the rate at which weak hitting infielders may be traded for slow outfielders.

6. Which of the following is a reasonable method to construct the production possibility set, which is the set of *all output combinations* that are producible for a given set of inputs?
 - a. Set a level for each of the outputs, and then find all levels of inputs that are able to produce this specific output combination.
 - b. Set a level for all inputs, pick a level of one of the two outputs, find the maximum level of the other output for this level of the first output, and then repeat for other levels of the first output.
 - c. Set a level for all inputs, pick a level of one of the two outputs, find all feasible levels of the other output for this level of the first output, and then repeat for other levels of the first output.
 - d. Set a level for each of the outputs, choose the level of each of the input in such a way that the cost of producing the set output level is minimized.
 - e. Set a level for each of the outputs and hold this fixed, pick a level of one of the two inputs and then find the minimum level of the other input that is required to produce the chosen output combination given the fixed level of the first input, and then repeat for other levels of the first input.

7. Which of the following is a reasonable method to construct the cost function?
 - a. Set a level for each of the outputs, and then find all levels of inputs that are able to produce this specific output combination.
 - b. Set a level for all inputs, pick a level of each of the outputs in such a way that the revenue to the firm is maximized.
 - c. Set a level for all inputs, pick a level of one of the two outputs, find all feasible levels of the other output for this level of the first output, and then repeat for other levels of the first output.
 - d. Set a level for each of the outputs, choose the level of each of the inputs in such a way that the cost of producing the set output level is minimized.
 - e. Set a level for each of the outputs and hold this fixed, pick a level of one of the two inputs and then find the minimum level of the other input that is required to produce the chosen output combination given the fixed level of the first input, and then repeat for other levels of the first input.

8. What is the shutdown rule for a firm in the short-run?
 - a. In the short-run, the firm should continue to produce if marginal revenue (MR) is equal to marginal cost (MC); 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, if some fixed costs are not sunk, the firm should continue to produce if $(TR - TVC) > (TFC - \text{sunk fixed costs}) > 0$; otherwise, it should shut down.
 - d. In the short-run, the firm should continue to produce if total revenue (TR) exceeds total variable costs (TVC) and total fixed costs (TFC) are all sunk; otherwise, it should shut down.
 - e. Both c and d are reasonable rules.

9. Opportunity cost is best described as
 - a. the value of the time needed to make a choice.
 - b. the value of the alternative opportunity given up when a choice is made.
 - c. the most cost efficient way to produce an opportunity.
 - d. the cost of discovering an opportunity.
 - e. the cost of the inputs in a production process.

10. What is a technology in economics?
 - a. A major at DMACC.
 - b. A method of achieving a practical purpose.
 - c. A description of the set of outputs that can be produced by a given set of factors of production using a given method or process.
 - d. A description of the way a firm makes its decisions.
 - e. A description of the set of inputs used by the firm.

11. Ignoring all other goods, if Jehosaphat's marginal utility per pound of meal is 40 and per pound of oil is 100, his
- total utility could be increased by buying more oil and less meal.
 - total utility could be increased by buying more meal and less oil.
 - total utility would be maximized if the price per pound of oil is 2.5 times the price per pound of meal.
 - total utility would be maximized if the price per pound of meal is one-fourth the price per pound of oil.
 - total utility would be maximized if the price per pound of meal is $2/5$ the price per pound of bread.
12. Which of the following is a correct statement concerning expendables, capital, and capital services?
- Expendable factors of production are completely used up or consumed during a single production period. Capital is machinery, buildings and equipment. Capital services are the flows of financial assets and other services provided by the banking sector.
 - Expendable factors of production are inputs that are purchased outside the firm. Capital is machinery, buildings and equipment along with human capital. Capital services are the flows of financial assets and other services provided by the banking sector.
 - Expendable factors of production are completely used up or consumed during a single production period. Capital is a stock that is not used up during a single production period, and provides services over time. Capital services are the flow of productive services that can be obtained from a given capital stock during a production period.
 - Expendable factors of production are inputs that are purchased outside the firm. Capital is a stock that is not used up during a single production period, and provides services over time. Capital services are the flow of productive services that can be obtained from a given capital stock during a production period.
13. Fixed costs are those costs
- that the firm cannot recover if it liquidates.
 - that are affected by the firm's actions in the current period.
 - that are tied to buildings.
 - that the firm is committed to pay for factors of production, regardless of the firm's current decisions.
 - that have been adjusted by mafia hit men.
14. Which of the following statements is true?
- The substitution effect of a price change measures movements along indifference curves.
 - The income effect of a price change is always positive.
 - The substitution effect of a price change is undetermined.
 - The income effect of a price change measures the change in the quantity demanded of a good due exclusively to changes in real income with prices held fixed.
 - Both a and d are correct.
15. Along any indifference curve we know that utility remains constant as we change levels of q_1 and q_2 . We can write this statement as an equation as $\Delta q_1 MU_{q_1} + \Delta q_2 MU_{q_2} = 0$. This implies that
- $$\frac{\Delta q_1}{\Delta q_2} = -\frac{MU_{q_1}}{MU_{q_2}}$$
 - The marginal rate of substitution of q_1 for q_2 is equal to $-\frac{MU_{q_2}}{MU_{q_1}}$
 - $$\frac{-p_2}{p_1} = \frac{\Delta q_1}{\Delta q_2}$$
 - The indifference curve is tangent to the budget line.
 - Both a and b are correct.

Use the following table to answer question 21 where the data in the table gives the **cost per unit** for each item.

	Per television	Per case chopsticks
Japan	21000 yen	700 yen
Malaysia	800 ringgit	25 ringgit

21. Which of the following is true?
- Japan has a comparative advantage in producing chopsticks.
 - Germany has a comparative advantage in producing watches.
 - Malaysia has a comparative advantage in producing chopsticks.
 - Japan has an absolute advantage in producing televisions and a comparative advantage in producing televisions.
 - Malaysia had an absolute advantage in producing televisions.
22. For this problem the price of good 1 = $p_1 = 5$, the price of good 2 = $p_2 = 4$ and Income = $I = 93$. Below is a table of alternative consumption choices q_1 and q_2 , their cost and the marginal utility (MU_i) they provide. Which is the optimal choice?

q_1	q_2	cost	MU_1	MU_2
16.20	3.00	93.0000	0.1991	0.9555
15.00	4.50	93.0000	0.2366	0.8517
13.00	7.00	93.0000	0.3017	0.7241
11.40	9.00	93.0000	0.3586	0.6454
9.80	11.00	93.0000	0.4221	0.5789
6.60	15.00	93.0000	0.5833	0.4666
5.00	17.00	93.0000	0.6932	0.4159
0.00	23.25	93.0000	1.4699	0.2520

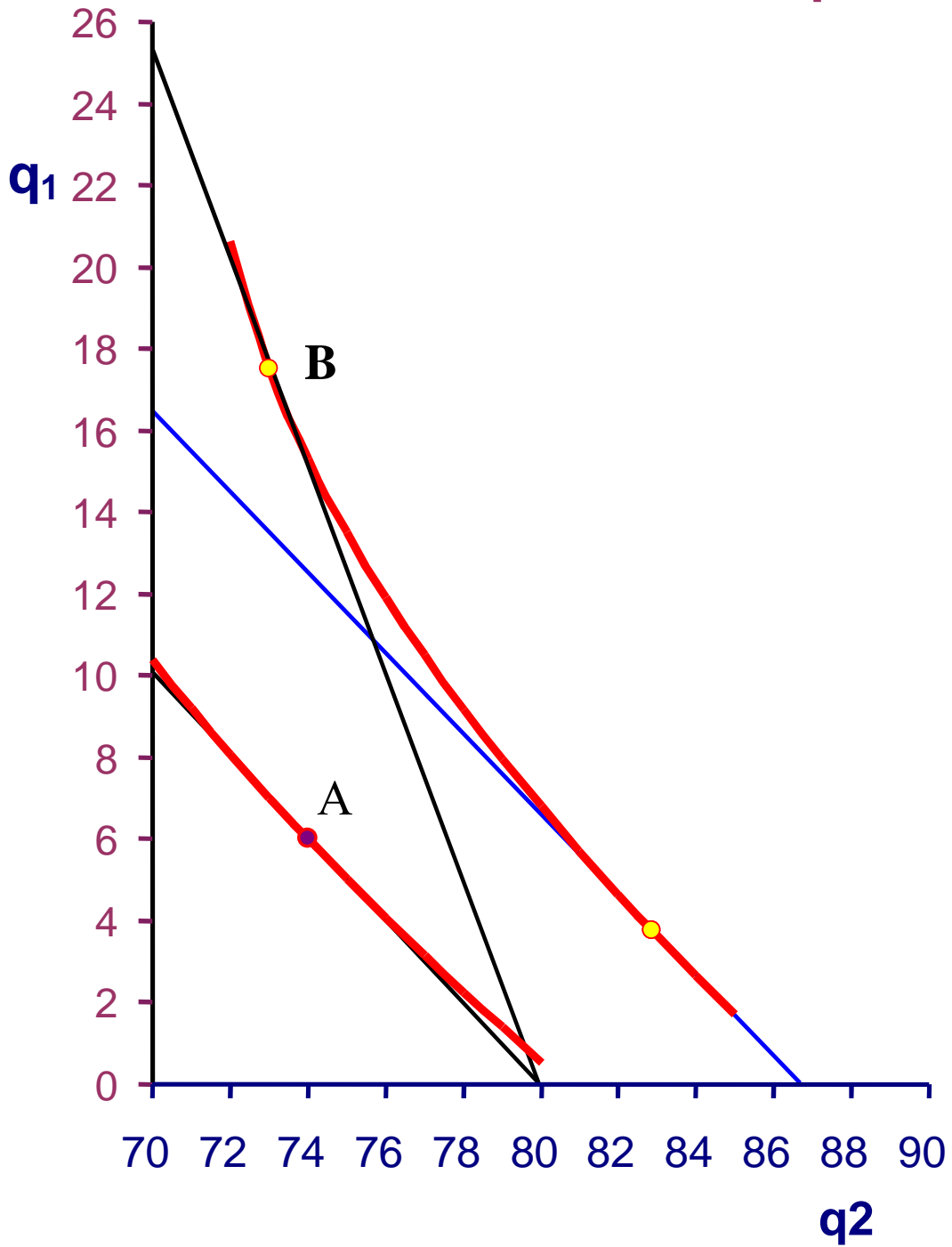
- $q_1 = 15.00$ $q_2 = 4.5$
- $q_1 = 13.00$ $q_2 = 7.0$
- $q_1 = 11.40$, $q_2 = 9.0$
- $q_1 = 6.60$ $q_2 = 15.0$
- $q_1 = 5.00$ $q_2 = 17.0$

Use the following table for questions 23 and 24 where x is the level of the input, y is the level of output, APP is average physical product and D MPP is marginal physical product of increasing an input from the previous level.

x	y	APP	D MPP
0	0		
2	71.2	35.6	
4	161.6		
6	266.4		
8	380.8		
10	500		
12	619.2	51.6	
14	733.6	52.4	
16	838.4		52.4
18	928.8		
20	1000		
22	1047.2	47.6	
24	1065.6		
26	1050.4	40.4	-7.6
28	996.8	35.6	

23. What is the average physical product of x when $x = 8$?
- 44.4
 - 52.4
 - 50.0
 - 47.6
 - 57.2
24. What is the marginal physical product of x when x increases from 12 to 14?
- 59.6
 - 45.2
 - 57.2
 - 47.6
 - 52.4
25. On the graph on the next page, there is a decrease in the price of good 1. The initial situation is $p_1 = 1$, $p_2 = 1$, and income = 80. The initial equilibrium is at point A. Then the price of p_1 falls to 0.40. The consumer buys more of good one as its price falls. The new equilibrium is at point B. Substitution and income effects are evaluated at the new utility level. Which of the following statements is true?
- The income effect is the movement from point A to point B.
 - The substitution effect is from point B to the point on the same indifference curve where a budget line with the initial prices but higher income is tangent.
 - Good one is an inferior good.
 - The substitution effect is from point A to the point on the same indifference curve where a budget line with the subsequent prices but lower income is tangent.
 - Both b and c are correct.

Decrease in p_1



26. Consider the following production function

$$y = 40x_1 + 20x_2 - x_1^2 - 0.5x_2^2$$

The price of x_1 is \$3 and the price of x_2 is \$2. Which of the following points is the minimum cost way to produce 269 units of output?

x_1	x_2	y	MPP_1	MPP_2	MRS	w_2 / w_1
7.000	2.000		26.000	18.000		
6.863	2.200		26.274	17.800		
6.762	2.350		26.476	17.650		
6.663	2.500	269.000	26.674	17.500		
6.565	2.650	269.000	26.869	17.350		
6.406	2.900		27.188	17.100		
6.343	3.000		27.313	17.000		
6.100	3.400	269.000	27.801	16.600		

- a. $x_1 = 6.863$, $x_2 = 2.2$
- b. $x_1 = 6.762$, $x_2 = 2.35$
- c. $x_1 = 6.663$, $x_2 = 2.5$
- d. $x_1 = 6.565$, $x_2 = 2.65$
- e. $x_1 = 6.343$, $x_2 = 3.0$

27. Consider a firm with the following short run or avoidable cost function.

$$cost(y) = 50 + 20y + 0.5y^2$$

Marginal cost is given by

$$MC(y) = 20 + y$$

Average cost reaches its minimum at the point where it is equal to marginal cost. From a short-run perspective, what is the level of y at which average cost is minimized?

- a. 12
- b. 4
- c. 5
- d. 8
- e. 10

28. For the firm in question 27, what is the short run supply function?

- a. $y = 0$ if $p \leq 10$, $y = 2p - 32$ if $p \geq 10$
- b. $y = 0$ if $p \leq 10$, $y = p - 20$ if $p \geq 10$
- c. $y = 0$ if $p \leq 30$, $y = p - 20$ if $p \geq 30$
- d. $y = 0$ if $p \leq 30$, $y = p - 10$ if $p \geq 30$
- e. $y = 0$ if $p \leq 30$, $y = \frac{1}{2}p - 10$ if $p \geq 30$

For questions 29 and 30, use the table below. The table contains data on demand for 2 goods, screwdrivers (S) and curling irons (C). The notation is as follows: PS = price of screwdrivers, PC = price of curling irons, I = income, DS = demand for screwdrivers, DC = demand for curling irons. There are four situations shown.

			DS, I = 124	DC, I=124				DS, I = 164	DC, I=164
PS	PC	I	& PC = 4	& PC = 4	PS	PC	I	& PC = 4	& PC = 4
2.00	4.00	124.00	24.80	18.60	2.00	4.00	164.00	32.80	24.60
4.00	4.00	124.00	11.20	19.80	4.00	4.00	164.00	15.20	25.80
6.00	4.00	124.00	6.67	21.00	6.00	4.00	164.00	9.34	27.00
8.00	4.00	124.00	4.40	22.20	8.00	4.00	164.00	6.40	28.20
10.00	4.00	124.00	3.04	23.40	10.00	4.00	164.00	4.64	29.40
12.00	4.00	124.00	2.14	24.60	12.00	4.00	164.00	3.47	30.60
14.00	4.00	124.00	1.49	25.80	14.00	4.00	164.00	2.63	31.80
16.00	4.00	124.00	1.00	27.00	16.00	4.00	164.00	2.00	33.00
			DS, I = 124	DC, I=124				DS, I = 164	DC, I=164
PS	PC	I	& PC = 2	& PC = 2	PS	PC	I	& PC = 2	& PC = 2
2.00	2.00	124.00	23.60	38.40	2.00	2.00	164.00	31.60	50.40
4.00	2.00	124.00	10.60	40.80	4.00	2.00	164.00	14.60	52.80
6.00	2.00	124.00	6.27	43.20	6.00	2.00	164.00	8.94	55.20
8.00	2.00	124.00	4.10	45.60	8.00	2.00	164.00	6.10	57.60

29. What is the income elasticity of demand for screwdrivers when the price of curling irons is \$4.00, the price of screwdrivers is \$10.00, and income goes from \$124 to \$164?
- 1.000
 - 0.940
 - 1.500
 - 1.057
 - 1.333
30. Now consider the demand for curling irons when the price of curling irons is \$2.00 and income is \$124. Consider a change in the price of screwdrivers from \$4 to \$6. What is the cross-price elasticity of demand for curling irons with respect to the price of screwdrivers?
- 0.111
 - 0.143
 - 0.189
 - 0.220
 - .111

Consider the following data on peanut and millet production in Senegal and Guinea where the data is **production per day**. Assume that the production possibility frontier is linear. With no peanut production, Senegal can produce 12,000 units of millet. With 250 units of peanuts, Senegal has no millet production, etc.

	Peanuts	Millet
Senegal	0	10,000
Senegal	250	0
Guinea	0	9,000
Guinea	150	0

31. Which of the following statements is true?
- Guinea has an absolute advantage in millet.
 - Senegal has an absolute advantage in both products and a comparative advantage in millet.
 - Both d and e are correct
 - Guinea has to give up 60 units of millet to get a unit of peanuts.
 - Senegal has an absolute advantage in both products and a comparative advantage in peanuts.
32. If each country produces 120 units of peanuts, and each used their remaining resources for millet production, what would total millet production be?
- 8,000
 - 9,400
 - 7,000
 - 7,200
 - 10,000

33. Consider two firms. One firm has a short supply function given by

$$y_1 = \begin{cases} 0, & p \leq 30 \\ p - 20 & p \geq 30 \end{cases}$$

The other has a short run supply function given by

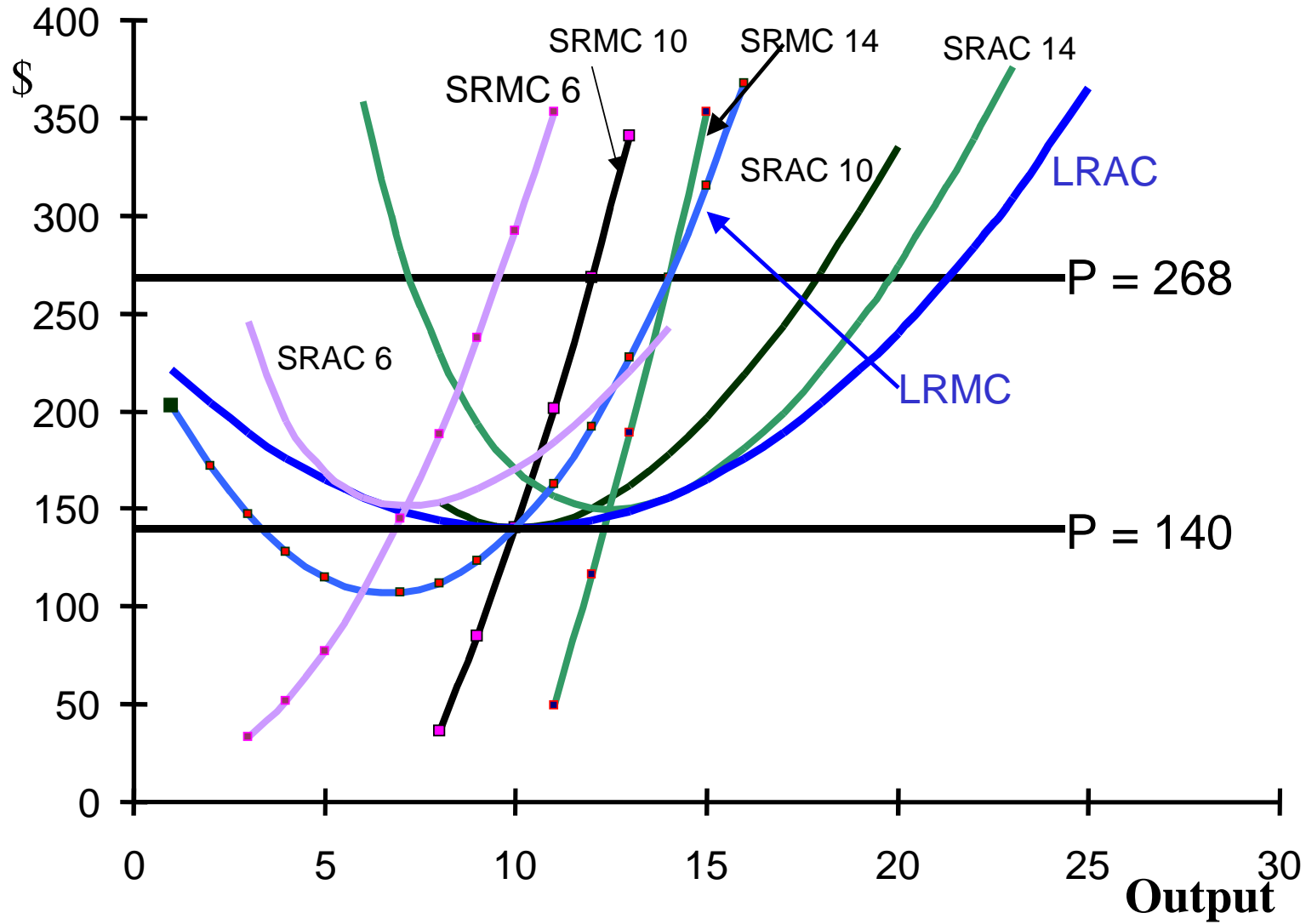
$$y_2 = \begin{cases} 0, & p \leq 24 \\ \frac{1}{2}p - 5 & p \geq 24 \end{cases}$$

Demand in this market is given by $Q^D = 115 - 2p$. How much will firm 2 supply in a short-run equilibrium in this market?

- 35
- 11
- 15
- 48
- 20

34. Consider the figure on the next page. It contains a long run average cost curve (LRAC), a long run marginal cost curve (LRMC), and short run average (SRAC) and marginal cost curves (SRMC) for plant sizes designed for 6, 10 and 14 units of output. The price of output is assumed to be fixed at a level of \$268. Which of the following statements is true?
- The firm should produce approximately 9 units of output.
 - The size 14 plant will be the long run equilibrium size in this industry if price stays at \$268 regardless of entry or exit.
 - The long run equilibrium for this industry with free entry and exit will have each firm producing greater than 14 units of output.
 - At the output where price is equal to marginal cost, profit per unit is higher with the size 10 plant than the size 6 plant.
 - Both b and d are correct.
35. What is the long run equilibrium plant size in this industry if there is freedom of entry and exit?
- 6
 - 10
 - Cannot tell from the diagram.
 - 14
 - Abandon this industry.

Short and Long Run Equilibrium



Consider the table on the next page for questions 36 and 37 where y is output, LRAC is long run average total cost, LRMC is long run marginal cost, SRAC is short run average total cost, SRMC is short run marginal cost, and the number after SRAC denotes plant size.

36. If the price was permanently \$914, what size plant should the firm build?
- 6
 - 10
 - 14
 - 18
 - Can't tell from the data.
37. What will be the long run price and marginal cost in this industry if there is free entry and exit and all firms have the same cost structure?
- 146
 - 914
 - 314
 - 210
 - 466
38. Consider the following table which shows cost and revenue data for a specific firm. The firm believes that it is a price taker in this market. Q denotes output, FC denotes fixed cost, VC denotes variable cost, C represents cost, AFC is average fixed cost, AVC is average variable cost, ATC is average total cost, MC is marginal cost and Price is the price of Q . TR is total revenue and MR is marginal revenue. How much output will the firm produce?

Q	FC	VC	C	AFC	AVC	ATC	MC	Price	TR	MR
3	144	45	189	48.00	15.00	63.00	18	54	162	48
4	144	64	208	36.00	16.00	52.00	20	52	208	44
5	144	85	229	28.80	17.00	45.80	22	50	250	40
6	144	108	252	24.00	18.00	42.00	24	48	288	36
7	144	133	277	20.57	19.00	39.57	26	46	322	32
8	144	160	304	18.00	20.00	38.00	28	44	352	28
9	144	189	333	16.00	21.00	37.00	30	42	378	24
10	144	220	364	14.40	22.00	36.40	32	40	400	20
11	144	253	397	13.09	23.00	36.09	34	38	418	16
12	144	288	432	12.00	24.00	36.00	36	36	432	12
14	144	364	508	10.29	26.00	36.29	40	32	448	4
16	144	448	592	9.00	28.00	37.00	44	28	448	-4

- 6
- 7
- 8
- 10
- 12

y	Total Cost	LRAC	LRMC	SRAC 6	SRMC 6	SRAC 10	SRMC 10	SRAC 14	SRMC 14	SRAC 18	SRMC 18
0.00	0.00										
1.00	372.00	372.00	336.00	872.00	136.00	1992.00		3752.00		6152.00	
2.00	676.00	338.00	274.00	498.00	114.00	978.00		1778.00		2898.00	
3.00	924.00	308.00	224.00	368.00	104.00	634.67		1114.67		1808.00	
4.00	1128.00	282.00	186.00	302.00	106.00	462.00		782.00		1262.00	
5.00	1300.00	260.00	160.00	264.00	120.00	360.00		584.00		936.00	
6.00	1452.00	242.00	146.00	242.00	146.00	295.33		455.33		722.00	
7.00	1596.00	228.00	144.00	230.86	184.00	253.71	24.00	368.00		573.71	
8.00	1744.00	218.00	154.00	228	234.00	228.00	74.00	308.00		468.00	
9.00	1908.00	212.00	176.00	232.00	296.00	214.22	136.00	267.56		392.00	
10.00	2100.00	210.00	210.00	242.00	370.00	210.00	210.00	242.00	50.00	338.00	
11.00	2332.00	212.00	256.00	257.45	456.00	213.82	296.00	228.36	136.00	301.09	
12.00	2616.00	218.00	314.00	278.00	554.00	224.67	394.00	224.67	234.00	278.00	74.00
13.00	2964.00	228.00	384.00	303.38	664.00	241.85	504.00	229.54	344.00	266.46	184.00
14.00	3388.00	242.00	466.00	333.43	786.00	264.86	626.00	242.00	466.00	264.86	306.00
15.00	3900.00	260.00	560.00	368.00	920.00	293.33	760.00	261.33	600.00	272.00	440.00
16.00	4512.00	282.00	666.00	407.00	1066.00	327.00	906.00	287.00	746.00	287.00	586.00
17.00	5236.00	308.00	784.00	450.35	1224.00	365.65	1064.00	318.59	904.00	309.18	744.00
18.00	6084.00	338.00	914.00	498.00	1394.00	409.11	1234.00	355.78	1074.00	338.00	914.00
19.00	7068.00	372.00	1056.00	549.89	1576.00	457.26	1416.00	398.32	1256.00	373.05	1096.00
20.00	8200.00	410.00	1210.00	606.00	1770.00	510.00	1610.00	446.00	1450.00	414.00	1290.00

39. Consider an individual firm with a cost function given by

$$\text{cost}(q) = 72 + 20q + 0.5q^2$$

Marginal cost is given by

$$MC(q) = 20 + q$$

Assume that there are 50 price-taking firms just like this in the industry. What is the supply function for this industry?

- a. $Q^S = 50p - 500$
 - b. $Q^S = 2p - 20$
 - c. $Q^S = 25p - 500$
 - d. $Q^S = 40p - 1000$
 - e. $Q^S = 50p - 1000$
40. Consider a competitive market with the 50 firms from problem 39 and a market with demand curve given by $Q^D = 1240 - 20p$. What is the market equilibrium price?
- a. 23.2
 - b. 36.00
 - c. 24.86
 - d. 32.00
 - e. 37.33
41. Now consider a monopoly which buys out all the firms in problem 39 and operates them as a single firm. How many units will the monopolist sell to maximize profit?
- a. 600.00
 - b. 400.00
 - c. 500.00
 - d. 350.00
 - e. 733.33

**Economics 101
Final Exam
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Question	Correct Answer	# Right	Question	Correct Answer	# Right
1	d		23	d	
2	c		24	c	
3	e		25	e	
4	d		26	b	
5	c		27	e	
6	c		28	c	
7	d		29	c	
8	e		30	b	
9	b		31	c	
10	c		32	c	
11	c		33	c	
12	c		34	e	
13	d		35	b	
14	e		36	d	
15	b		37	d	
16	a		38	e	
17	d		39	e	
18	a		40	d	
19	c		41	d	
20	b				
21	c				
22	d				