

Week #6 Worksheet Solutions– Explicit Cost ~ ATC, AVC, and AFC

Exercise 6.1: Fill in the marginal and average product columns. According to the chart, the point of diminishing returns occurs when?

# Workers	Total Product	Marginal Product	Average Product
0	0	--	--
1	5	5	5
2	14	9	7
3	30	16	10
4	44	14	11
5	50	6	10

Exercise 6.2: Suppose that Joan's has done its accounting work, and has come up with these figures for what it costs Joan's Home Care to maintain various numbers of patients for a year. Based on the information below, fill in the fixed cost, variable cost and marginal cost columns.

# of Patients	Total Cost	Fixed Cost	Variable Cost	Marginal Cost
0	\$1000	\$1000	\$0	\$0
1	\$4500	\$1000	\$3,500	\$3,500
2	\$7500	\$1000	\$6,500	\$3,000
3	\$10000	\$1000	\$9,000	\$2,500
4	\$12000	\$1000	\$11,000	\$2,000
5	\$14500	\$1000	\$13,500	\$2,500

Exercise 6.3: Complete the cost sheet below using the information already filled in:

Quantity	TC	FC	VC	MC	AC	AVC	AFC
0	100	100	0	--	--	--	--
1	139	100	39	39	139	39	100
2	168	100	68	29	84	34	50
3	207	100	107	39	69	35.6	33.3
4	256	100	156	49	64	39	25
5	335	100	235	79	67	47	20

- 1) Calvin leaves his \$25,000/year job as a graphic artist for an advertising firm to become a self-employed cartoonist. He makes money as a cartoonist by selling his strips to newspapers. To start up his company, he uses \$10,000 out of his savings account that earned 5% interest. The cost of his supplies, in addition to the \$10,000 he used to start the company, was \$50,000.

What is his accounting cost?

$$10,000 + 50,000 = \$60,000 \text{ (supplies + savings)}$$

What is his economic cost?

$$60K \text{ (above)} + 25,000 \text{ (forsaken wages)} + 500 \text{ (interest he could have earned on savings)} = 85,500$$

- 2) Diminishing marginal returns for the first four units of a variable input is exhibited by the total product sequence:
- 50, 50, 50, 50
 - 50, 40, 30, 20
 - 50, 110, 180, 260
 - 50, 100, 150, 200
 - 50, 90, 120, 140

- 3) Suppose the first four units of a variable input generate corresponding total outputs of 200, 350, 450 and 500. The marginal product of the third unit of input is:
- a) 50
 - b) 100**
 - c) 150
 - d) 200
 - e) 350

- 4) Davey produces 100 glasses of lemonade with average total cost of 50 cents per glass and average variable cost of 40 cents per glass. What is Davey's total fixed cost?

$$AC = TC / Q \rightarrow TC = AC * Q \rightarrow \$0.50 * 100 = \$50.00$$

$$AVC = VC / Q \rightarrow VC = AVC * Q \rightarrow \$0.40 * 100 = \$40.00$$

$$TC = VC + FC \rightarrow \$50 = \$40 + FC \rightarrow FC = \$10.00$$

- a) \$40.00
 - b) \$50.00
 - c) \$12.00
 - d) \$0.10
 - e) \$10.00**
- 5) A plant producing T-shirts finds that output will vary with the number of workers employed per week in the following way:

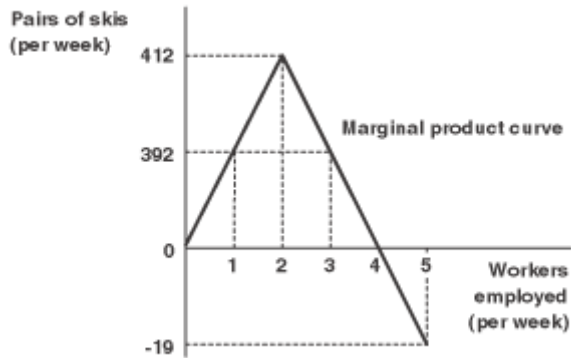
Number of workers employed per week	Output (T-shirts per week)
1	14
2	36
3	66
4	92
5	110
6	120
7	125
8	125

The point of diminishing returns is reached just after

- a) 1 worker is employed.
 - b) 5 workers are employed.
 - c) 3 workers are employed.**
 - d) 2 workers are employed.
 - e) 4 workers are employed.
- 6) The point of diminishing returns occurs when
- a) the total product curve is at its maximum.
 - b) the marginal product curve is at its minimum.
 - c) the marginal cost curve is at its minimum.**
 - d) the average product curve is at its maximum.
- 7) At current levels of operation, the marginal product of labor in a factory exceeds the average product of workers. If another worker is employed,
- a) the average product of labor will decrease.
 - b) there will be no change in the average product of labor.
 - c) there will be no change in the marginal product of labor.
 - d) the average product of labor will increase.**

- 8) A firm's total variable cost increases from \$4,000 to \$4,020 as the firm increases its output from 400 to 401 units. What is the marginal cost of the additional unit of output?
- a) \$4,020
 - b) \$4,000
 - c) Cannot be determined from the information given.
 - d) \$20
 - e) \$401

9)



The figure above shows the marginal product of labor curve for a ski manufacturer. Assuming 2 workers are hired, what is the average weekly product of labor?

- a) 202 pairs of skis.
- b) 804 pairs of skis.
- c) 402 pairs of skis.
- d) 412 pairs of skis.