

EE211 Section 1
Homework 3 Answers

Explain your answers with graph in details.

Mankiw, N.G., (2023) **Principles of Microeconomics**, 10th ed., Cengage, (ISBN-13: 978-981-5119-30-5)

Chapter 14

Problems and Applications # 1, 3 and 4

1.
 - a. opportunity cost
 - b. average total cost
 - c. fixed cost
 - d. variable cost
 - e. total cost
 - f. marginal cost.

3.
 - a. The following table shows the marginal product of each hour spent fishing:

Hours	Fish	Fixed Cost	Variable Cost	Total Cost	Marginal Product
0	0	\$10	\$0	\$10	---
1	10	10	5	15	10
2	18	10	10	20	8
3	24	10	15	25	6
4	28	10	20	30	4
5	30	10	25	35	2

3.
 - b. Figure A graphs the fisherman's production function. The production function becomes flatter as the number of hours spent fishing increases, illustrating diminishing marginal product.

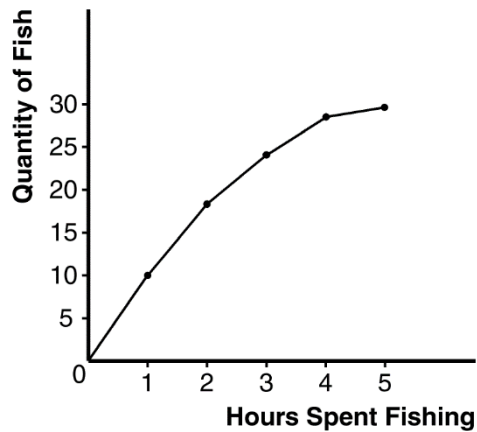


Figure A

- c. The table shows the fixed cost, variable cost, and total cost of fishing. Figure B shows the fisherman's total-cost curve. It has an upward slope because catching additional fish takes additional time. The curve is convex because there are diminishing returns to fishing time because each additional hour spent fishing yields fewer additional fish.

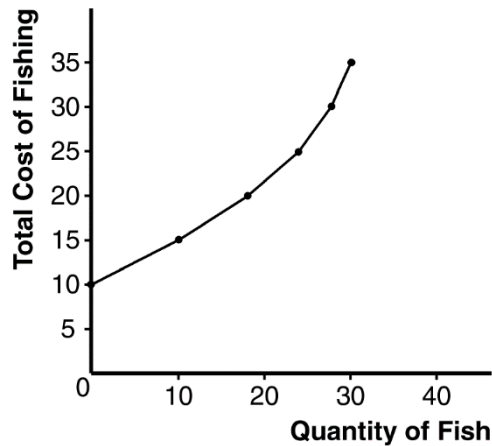


Figure B

4. Here is the completed table:

Workers	Output	Marginal Product	Total Cost	Average Total Cost	Marginal Cost
0	0	---	\$200	---	---
1	20	20	300	\$15.00	\$5.00
2	50	30	400	8.00	3.33
3	90	40	500	5.56	2.50
4	120	30	600	5.00	3.33
5	140	20	700	5.00	5.00
6	150	10	800	5.33	10.00
7	155	5	900	5.81	20.00

- See the table for marginal product. Marginal product rises at first, then declines because of diminishing marginal product.
- See the table for total cost.
- See the table for average total cost. Average total cost is U-shaped. When quantity is low, average total cost declines as quantity rises; when quantity is high, average total cost rises as quantity rises.
- See the table for marginal cost. Marginal cost is also U-shaped, but rises steeply as output increases. This is due to diminishing marginal product.
- When marginal product is rising, marginal cost is falling, and vice versa.
- When marginal cost is less than average total cost, average total cost is falling; the cost of the last unit produced pulls the average down. When marginal cost is

greater than average total cost, average total cost is rising; the cost of the last unit produced pushes the average up.