

Exercises from the book by Mankiw on Production and Costs
(This problem set is NOT to be handed in)

1. A fisherman notices the following relationship between hours spent fishing and the quantity of fish caught:

Hours	Quantity of fish (in kilos)
0	0
1	10
2	18
3	24
4	28
5	30

- a) What is the marginal product of each hour spent fishing? And the average product of labor?
 b) Use these data to graph the fisherman's production function. Explain its shape.
 c) The fisherman has a fixed cost of 10 (his pole). The opportunity cost of his time is 5 per hour. Graph the fisherman's total-cost curve. Explain its shape.
2. Consider the following cost information for a pizzeria:

Q (dozens)	Total Cost ()	Variable Cost ()
0	300	0
1	350	50
2	390	90
3	420	120
4	450	150
5	490	190
6	540	240

- a) What is the pizzeria's fixed cost?
 b) Construct a table in which you calculate the marginal cost per dozen pizzas using the information on total cost. Also calculate the marginal cost per dozen pizzas using the information on variable cost. What is the relationship between these sets of numbers?

3. Healthy Harry's Juice Bar has the following cost schedules:

Q (vats)	Variable Cost	Total Cost
0	0	30
1	10	40
2	25	55
3	45	75
4	70	100
5	100	130
6	135	165

- a) Calculate average variable cost, average total cost, and marginal cost for each quantity.
 b) Graph all three curves. What is the relationship between the marginal-cost curve and the average-total-cost curve? Between the marginal-cost curve and the average-variable-cost curve? Explain.
4. Consider the following table of long-run total cost for three different firms:

Quantity	1	2	3	4	5	6	7
Firm A	60	70	80	90	100	110	120
Firm B	11	24	39	56	75	96	119
Firm C	21	34	49	66	85	106	129

Does each of these firms experience economies of scale or diseconomies of scale?