Exercise Set 12
COST FUNCTIONS

III. Questions

1. Select values for the parameters: **a = 20, b = 3, F = 50**. Obtain, and sketch, the following functions:

TFC = 50

$TVC = 20Q + 3Q^2$

$TC = 20Q + 3Q^2 + 50$

AFC = 50/Q

AVC = 20 + 3Q

AC = 20 + 3Q + 50/Q

MC = 20 + 6Q

Fig. 1

Fig. 2

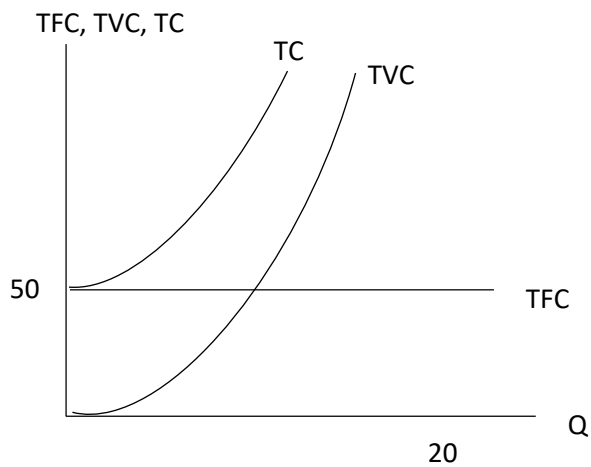AFC, AVC, AC

AC

AVC

AFC
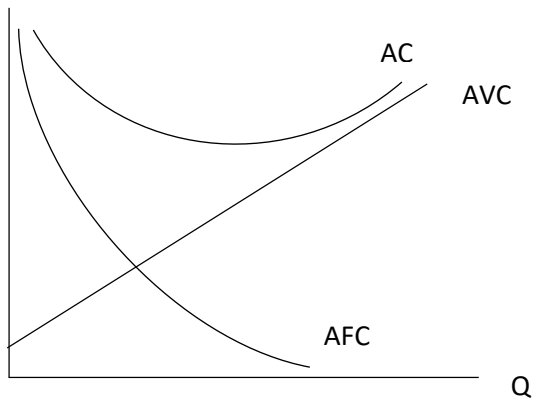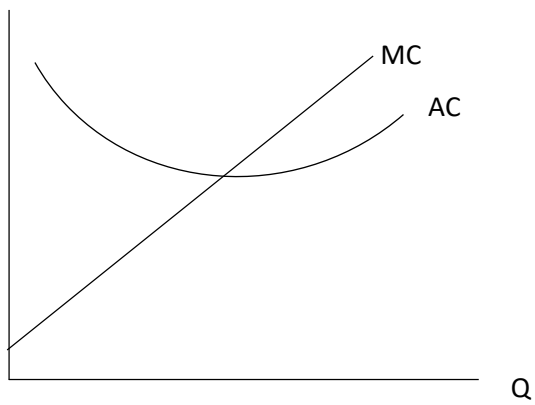
Q

Fig. 3

AC, MC

MC

AC

Q

2. Find the lowest point on the average cost curve. [Hint: At this point, AC = MC.]

a = 20	b = 3	F = 50
Gimme Costs or something!		
$AC =$ 20 + 3Q + 50/Q		
$Q_1 =$ 4.08248290·		
Minimum $AC =$ 44.4948974:		
MC at $Q_1 =$ 44.4948974:		

AC = MC

20 + 3Q + 50/Q = 20 + 6Q

3Q = 50/Q

$3Q^2 = 50$

Q = 4.08

3. The average cost curve is [linear / U-shaped]. Explain why.

U-shaped. Initial decline due to falling average fixed cost and increasing marginal returns. Eventually average cost goes up as diminishing returns to inputs set in.

4. An increase in the fixed cost will cause the AC curve to shift [down / up] and the MC curve to [shift up / shift down / remain unchanged]. Explain.

AC will shift up.

No change in MC.

5. Suppose a laptop manufacturer is able to negotiate lower prices for its components from its suppliers. This is likely to cause the laptop manufacturer's [AFC / AC] curve to shift [up / down]. Explain.

No change in AFC. Since AVC goes down, so will AC.

6. Consider the AC curve. The region where the slope is negative corresponds to [Increasing Returns to Scale / Constant Returns to Scale / Decreasing Returns to Scale]. Explain.

       Increasing returns to scale. When you double your inputs, your output will more than double, leading to a decrease in the average cost of production.

7. If production exhibits decreasing returns to scale, an increase in output will lead to [higher / lower] unit costs of production.

       Higher average cost.

8. A manufacturer of HDTV sets currently produces 300 sets a year at a cost of $6000 each. If its production rises to 2000, the average cost will fall to $3500. The firm will enjoy [economies / diseconomies] of scale by sliding [up / down] along the [negatively / positively] sloped segment of its average cost curve.

    Economies of scale.

    Sliding down along the negatively-sloped segment of AC.