Supplementary content 1 (for HKDSE 2028 and onwards)

Relationship between marginal cost curve and average cost curve

The following figure shows how marginal cost and average cost change with output:

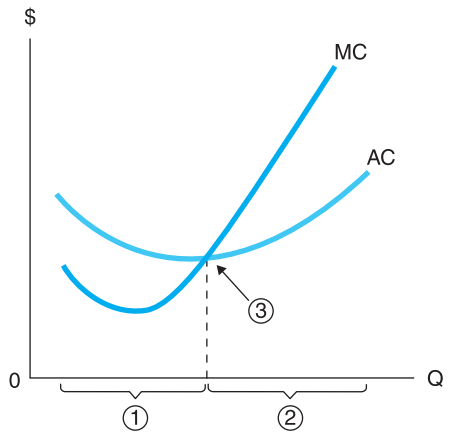


Fig. 1

As shown in the above figure, the MC and AC curves typically have the following features:

Feature 1: Both curves are U-shaped

When output increases, MC decreases initially. After a certain point, MC eventually increases because of the law of diminishing marginal returns. Hence, the MC curve is U-shaped.

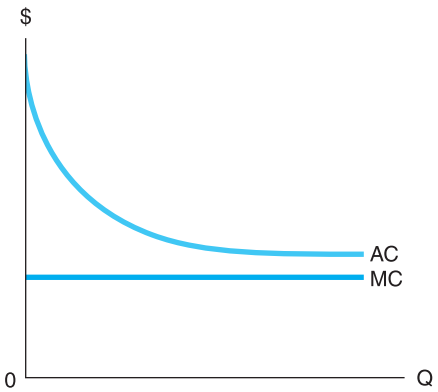
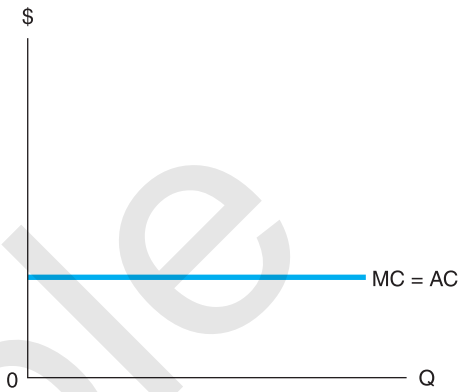
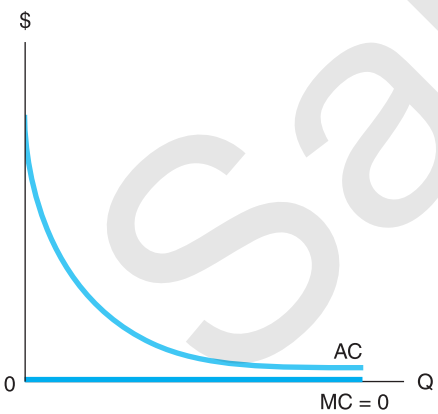
When output increases, AC decreases initially because the fixed cost is spread among more output. However, after a certain output level, the fall in average fixed cost is outweighed by the rise in average variable cost caused by diminishing marginal returns. Hence, AC rises eventually and the curve is U-shaped.

Feature 2: MC curve passes through the minimum point of the AC curve

This is because:

Output on Fig. 1	Relationship between MC and AC	Explanation
①	MC < AC	Producing an additional unit of output will lower AC. Hence, AC is falling.
②	MC > AC	Producing an additional unit of output will increase AC. Hence, AC is increasing.
③	MC = AC	Since AC decreases before this point and AC increases after this point, AC must be at the minimum level at this point.

There are other shapes of MC and AC curves:

Situation	Graphical representation
Constant MC and positive fixed cost: When output increases, the fixed cost is spread over more units of output. Hence, AC decreases with output and approaches MC.	
Constant MC and no fixed cost: AC is also constant and equal to MC. Hence, the MC and AC curves are the same horizontal lines.	
Zero MC and positive fixed cost: When MC is zero, total cost is equal to fixed cost. Hence, when output increases, AC decreases and approaches zero.	
Increasing MC and no fixed cost: When MC increases at a constant rate, AC increases at a lower constant rate. Hence, both curves are upward sloping and the MC curve lies above the AC curve.