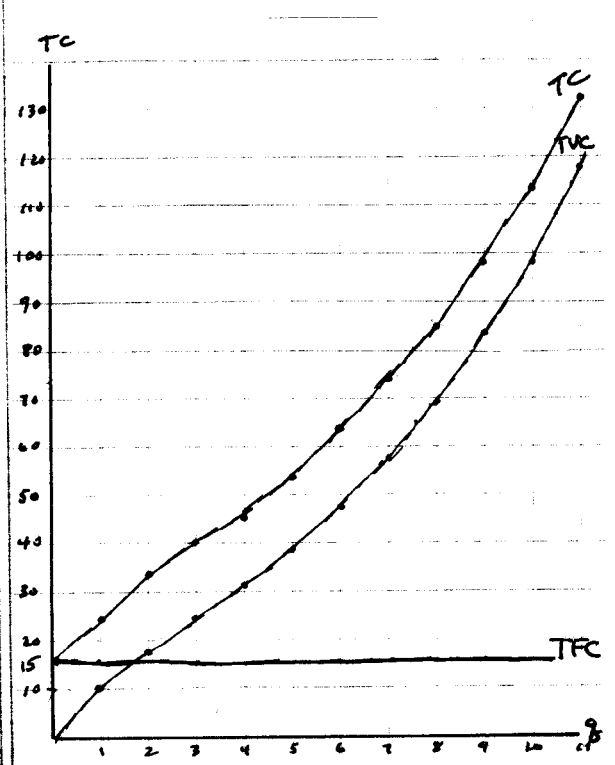
Eco 401-001 Problem Set #5 KEY Spring 2005

1. Bubba does not lose the $15000 he spends to purchase the truck — he merely loses the use of the money for the year. So the purchase price should not be included in his costs, but the interest earnings foregone should be included. Also, at the end of the year the truck will be worth less than $15000, so Bubba should include the economic depreciation of the asset in his costs.

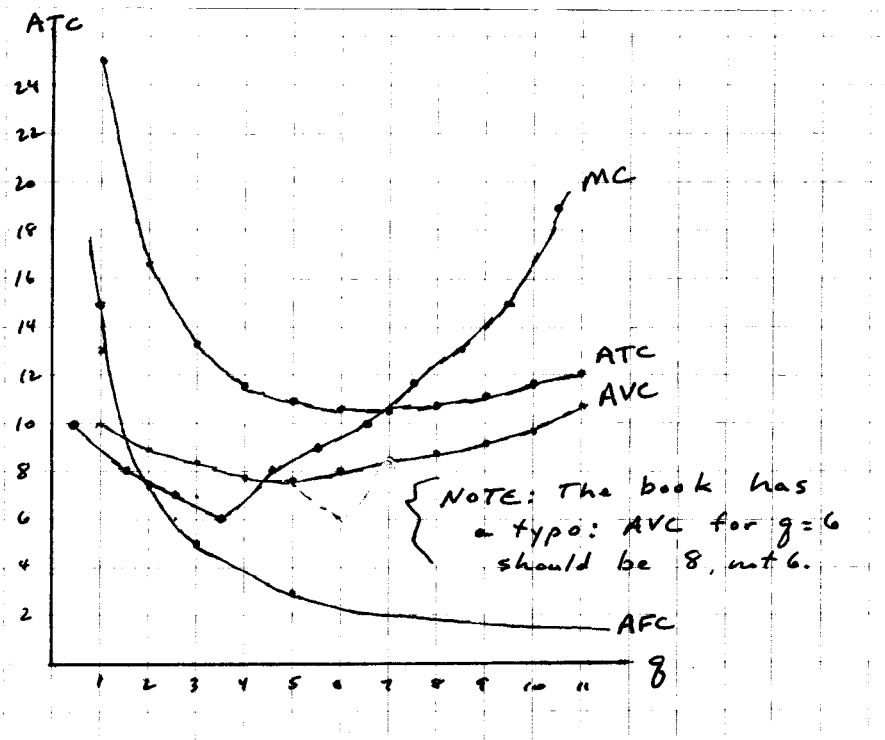
2. 

Total Fixed Cost is flat because fixed costs do not vary with the firm's rate of output.

Total Variable Cost is upward-sloping because variable costs vary directly with output.

Total Cost is also upward sloping because it is the sum of a constant (TFC) and an upward-sloping curve (TVC).

2. (cont)



Average Fixed Cost is constantly declining because TFC does not change but Q is increasing.

Average Variable Cost is U-shaped, indicating that at first marginal returns to labor are increasing, but eventually diminishing marginal returns set in.

Average total cost is the sum of constantly declining AFC and AVC which eventually slopes upward due to diminishing returns. Hence ATC is U-shaped.

Marginal Cost reflects the law of diminishing returns directly. Diminishing returns set in at the point where MC starts to slope upward.

3. $TC = a + bq + cq^2 = TFC + TVC$

if $q = 0$, $TC = a = TFC$

hence $TVC = bq + cq^2$

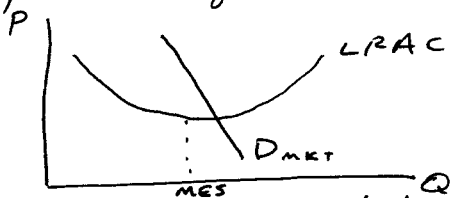
$AFC = TFC/Q = a/q$

$AVC = TVC/Q = \frac{bq + cq^2}{q} = b + cq$

$ATC = \frac{a}{q} + b + cq$

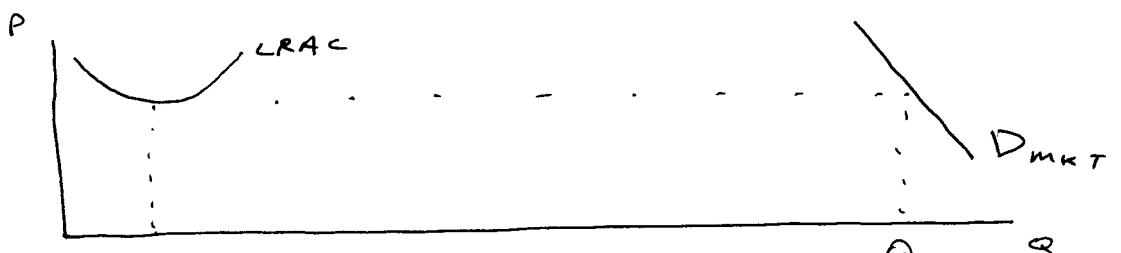
$MC = \frac{dTC}{dq} = b + 2cq$

4. Minimum efficient scale for ice skating rinks is large relative to market demand. Hence there is only room for one efficient-sized firm:



ice skating market

Minimum efficient scale for fast-food restaurants is small relative to market demand. Hence there is room for many fast food restaurants:



fast-food restaurants