Answer on Question #38995 – Economics – Other

Given that the total cost function is
TC = 100Q – Q^2 + 1/3 Q^3
Where Q=rate of output and TC=Total Cost
A. Determine the marginal and average cost functions
B. Calculate the output level that minimizes average cost
C. Calculate the output level that minimizes marginal cost

Solution

TC = 100Q – Q^2 + 1/3 Q^3

A. Marginal function MC = TC' = 100 - 2Q + Q^2
Average cost function ATC = TC/Q = 100 - Q + 1/3Q^2

B. The output level that minimizes average cost is in the point, where ATC' = 0 (ATC" = 1/3>0), so
-1 + 2/3Q = 0,
2/3Q = 1,
Q = 1.5 units

C. The output level that minimizes marginal cost is in the point, where MC' = 0 (MC" = 1>0), so
-2 + 2Q = 0,
2Q = 2,
Q = 1 unit.