Question #73974, Economics / Microeconomics

SOLUTION: -

$Q = 55 – 0.5*P$

So, $P = 110 – 2*Q$

TC(Total Cost) = $20 + Q + 0.2*Q^2$

a) TR(Total Revenue) = $Q*(110 – 2*Q)$
$= 110*Q – 2*Q^2$

b) MR = $110 – 4*Q$, MC = $1 + 0.4*Q$
To find Q at which MR = MC
$110 – 4*Q = 1 + 0.4*Q$
$109 = 4.4*Q$
So, $Q = 24.77$

c) P(Profit) = TR – TC
$= 109*Q – 2.2*Q^2 – 20$
Now, differentiating w.r.t Q at equating to 0 to find maximum
$dP/dQ = 109 – 4.4*Q = 0$
$Q = 24.77$

There is a correspondence between part b and c answers because at level of maximum profit marginal cost and marginal revenue are equal.