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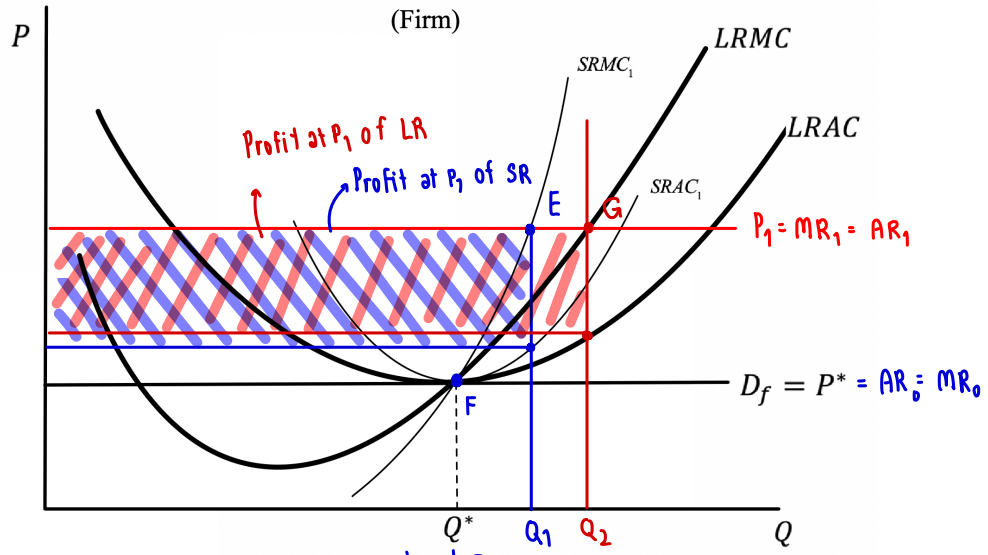
HW#13 Due May 13, 2021

Suppose that the market is in a Long-Run equilibrium where the price is at P^* and each firm produces Q^*. With the given $SRMC_1$ and $SRAC_1$ and $LRMC$ and $LRAC$, the market price increases from P^* to P_1,

a) Show how the firm will change its output in Short Run and Long Run.
b) Indicate the profit the firm receives in Short Run and Long Run.
c) Explain why the profit in Long Run is bigger than profit in Short Run.

a)



b) At first, the equilibrium of profit is Short run is at F
where 1) $SRMC_1(Q^*) = D_f$ and
2) Slope of $SRMC_1(Q^*)$ > slope of D_f
At F, $\pi(Q^*) = TR(Q^*) - TC(Q^*) = 0$
∴ The equilibrium is at Break-even price

The equibrium of profit in Long Run is at F
Where 1) $LRMC(Q^*) = D_f$
2) slope of $LRMC(Q^*)$ > slope of D_f

At F, $\pi(Q^*) = TR(Q^*) - TC(Q^*) = 0$
∴ The equilibrium is at shut-down price

After price increases to P_1, the eqi. of profit in Short run is at E
where 1) $SRMC_1(Q_1) = MR_1(Q_1)$ and
2) Slope of $SRMC_1(Q_1)$ > slope of $MR(Q_1)$
∴ The profit and production increase from Q^* to Q_1 at E

The eqi. of profit in Long Run is at G
where 1) $LRMC(Q_2) = MR_1(Q_2)$ and
2) slope of $LRMC(Q_2)$ > slope of $MR_1(Q_2)$
∴ The profit the firm got is excess profit and production increases to Q_2 at G

c) Because, in Short Run, there is always a total fixed cost (TFC) that causes SRAC to always be higher than LRAC while the firms are producing goods
and at Q_1 $MR(Q_1) > LRMC(Q_1)$
Profit is maximized at Q_2 where $MR(Q_2) = LRMC(Q_2)$
and slope of $MR(Q_2)$ < slope of $MC(Q_2)$
So, LR profit at Q_2 > LR profit at Q_1 > SR profit at Q_1