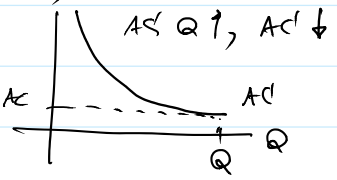
Tuesday, May 09, 2017 10:37 AM

MONOPOLY

1. A SINGLE SELLER (MONOPOLIST)
2. PRODUCT W/O SUBSTITUTES THAT HE SELLS
3. BARRIERS TO ENTRY
   - ACCESS TO KEY MAJOR INPUTS (EX MINERAL WATER SITE, DIAMOND MINE.)
   - LICENSES
   - PATENT / COPYRIGHT
   - CONCESSION (สัมปทาน)
   - ECONOMIE OF SCALE



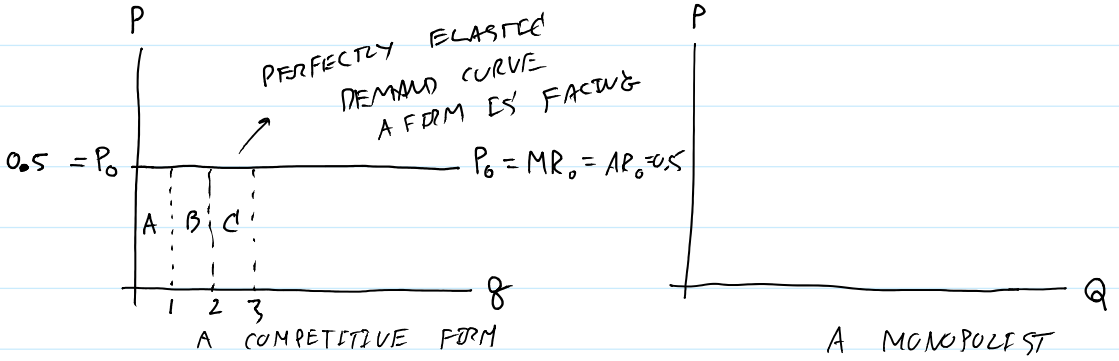
AC Q↑, AC↓

GIVEN THE CHARACTERISTICS ABOVE,

WE WANT TO EXPLORE SOME QUESTIONS?

1. PRICE MONOPOLIST SETS?
2. QUANTITY " " WANTS TO PRODUCE?
3. BENEFITS TO SELLER / BUYERS UNDER MONOPOLY?
4. REGULATED MONOPOLY?

FIRST UNDERSTANDING ABOUT P, TR, AR, MR.



P	Q	TR = P·Q	MR	AR
0.5	0	0		
0.5	1	0.5	0.5	$\frac{0.5}{1} = 0.5$
0.5	2	1	0.5	$\frac{1}{2} = 0.5$

0.5	1	0.5	0.5	$\frac{0.5}{1} = 0.5$
0.5	2	1	0.5	$\frac{1}{2} = 0.5$
0.5	3	1.5	0.5	$\frac{1.5}{3} = 0.5$
0.5	4	2	0.5	$\frac{2}{4} = 0.5$

IN PC' WORLD, MR = P !!!

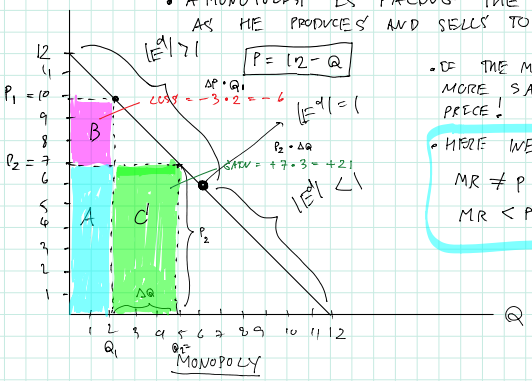
EXTRA REVENUE A FIRM GETS WHEN IT SELLS AN EXTRA UNIT. IS EXACTLY EQUAL TO PRICE OF THE PRODUCT.

THIS IS TRUE ONLY IN PC' WORLD!

IT DOES NOT TRUE/HOLD UNDER MONOPOLY, WE WILL SEE!

Tuesday, March 28, 2017 4:44 PM

- A MONOPOLIST IS FACING THE MARKET DEMAND CURVE AS HE PRODUCES AND SELLS TO ALL POTENTIAL CUSTOMERS.



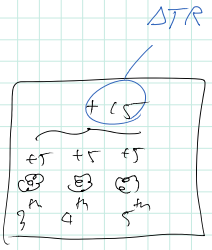
- IF THE MONOPOLIST WANTS TO ATTRACT MORE SALES, HE MUST LOWER THE PRICE!
- HERE WE WANT TO SHOW THAT $MR \neq P$. TO BE PRECISE, $MR < P$ UNDER MONOPOLY !!!

IF $P_1 = 10$, $Q = 2$. $TR_1 = P_1 \times Q_1 = 10 \times 2 = 20$ BAHT (AREA A+B)

NEXT, IF $P_2 = 7$, $Q_2 = 5$. $TR_2 = P_2 \times Q_2 = 7 \cdot 5 = 35$ BAHT (AREA A+C)

$\Delta TR = TR_2 - TR_1 = 35 - 20 = +15$ BAHT

$$MR = \frac{\Delta TR}{\Delta Q} = \frac{TR_2 - TR_1}{Q_2 - Q_1} = \frac{35 - 20}{5 - 2} = \frac{+15}{+3} = +5 \text{ BAHT/Q}$$



OBSERVE THAT $MR = 5 < P_2 = 7$

MARGINAL REVENUE IS NOT EQUAL TO PRICE AS WE HAVE SEEN IN PC WORLD, BUT MR IS LOWER THAN P !!! (WHY?)

Q: WHY $MR < P$ IN MONOPOLY STRUCTURE?

A: WHEN MONOPOLIST WANTS TO ATTRACT MORE SALES, HE MUST LOWER PRICE. NOTICE THAT Q ↑ FROM 2 TO 5 WHEN P ↓ FROM 10 TO 7.

B/F

$P_1 = 10$

$Q_1 = 2$

1st → 10

2nd → 10

+20

A/F

$P_2 = 7$

$Q_2 = 5$

1st → 7

2nd → 7

3rd → 7

4th → 7

5th → 7

+35

$\Delta P = 7 - 10 = -3$

$\Delta Q = 5 - 2 = +3$

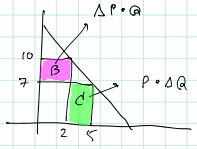
DECREASE IN REVENUE DUE TO THE FACT THAT THE FIRST TWO UNITS MUST BE SOLD AT THE NEW REDUCED PRICE

INCREASE IN REVENUE DUE TO EXTRA SALES = 7 + 7 + 7 = 21 BAHT

$= -6$

$= -3 + -3$

$= (7 - 10) + (7 - 10)$



NET GAIN = +21 − 6

= (+15 BAHT)

↓ ΔTR

$$MR = \frac{\Delta TR}{\Delta Q} = \frac{+15}{+3} = +5$$

ΔTR = +C −B

= PRICE · CHANGE IN QUANTITY − CHANGE IN PRICE · Q

$= (P \cdot \Delta Q) - (-\Delta P \cdot Q)$

$\Delta TR = P \cdot \Delta Q + \Delta P \cdot Q$

(GAIN, LOSS)

NOTE: WE ADD A MINUS SIGN TO $\Delta P \cdot Q$ SO THAT AREA BECOMES POSITIVE NUMBER.

$$MR = \frac{\Delta TR}{\Delta Q} = \frac{P \cdot \Delta Q + \Delta P \cdot Q}{\Delta Q}$$

$$= \frac{P \cdot \Delta Q}{\Delta Q} + \frac{\Delta P \cdot Q}{\Delta Q}$$

$$MR = P + \frac{\Delta P}{\Delta Q} \cdot Q$$

$$MR = 7 + \frac{-3}{+3} \cdot 2$$

$$MR = P + \frac{\Delta P}{\Delta Q} \cdot Q$$

$$MR = P + \frac{\Delta P}{\Delta Q} \cdot Q \cdot \frac{P}{P}$$

$$= P + \left(\frac{\Delta P}{\Delta Q} \cdot \frac{Q}{P}\right) \cdot P$$

$$= P + \frac{1}{\frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}} \cdot P$$

$$MR = P + \frac{1}{E^d} \cdot P$$

$$= P\left(1 + \frac{1}{E^d}\right)$$

$$MR = P\left(1 - \frac{1}{|E^d|}\right)$$

E^d = PRICE ELASTICITY OF DEMAND

- MR IS DETERMINED BY E^d.

① IF $|E^d| = 1$, $MR = 0$

② IF $|E^d| > 1$ ($\Rightarrow \%\Delta Q > \%\Delta P$), MR WILL BE POSITIVE. :)

③ IF $|E^d| < 1$ ($\Rightarrow \%\Delta Q < \%\Delta P$), MR WILL BE NEGATIVE. :(

CASE 2 MONOPOLIST WILL HAVE INCENTIVE TO LOWER THE PRICE WHEN PRICE ELASTICITY OF DEMAND IS GREATER THAN ONE!

NEXT, LET'S FIND MR CURVE...

FROM $P = 12 - Q$

$$TR = P \times Q = (12 - Q) \cdot Q = 12Q - Q^2.$$

$$MR = \frac{dTR}{dQ} = \frac{d(12Q - Q^2)}{dQ} = \frac{d12Q}{dQ} - \frac{dQ^2}{dQ} = 12 - 2Q.$$

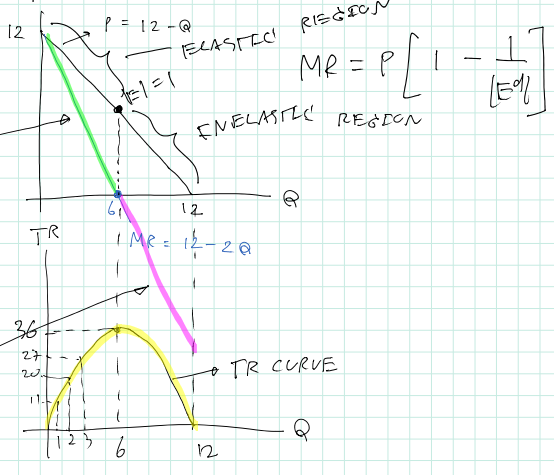
$MR = 12 - 2Q$

P	Q	TR	MR
12	0	0	
11	1	11	+11
10	2	20	+9
9	3	27	+7
8	4	32	+5
7	5	35	+3
6	6	36	+1
5	7	35	−1
4	8	32	−3
3	9	27	−5
2	10	20	−7
1	11	11	−9
0	12	0	−11

MR IS POSITIVE

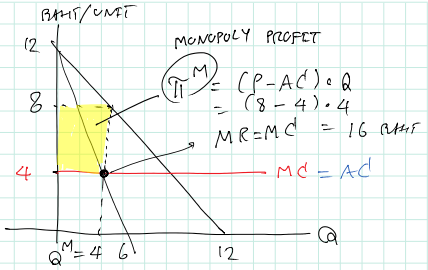
MR IS ZERO

MR IS NEGATIVE



$$MR = P\left[1 - \frac{1}{|E^d|}\right]$$

PROFIT MAXIMIZING RULE: $MR = MC$ STILL APPLIES HERE.



$P = 12 - Q$

$MR = 12 - 2Q$

SUPPOSE $MC = 4$ BAHT/UNIT AND $MC = AC$.
(= CONSTANT MARGINAL COST)

FIND PROFIT MAXIMIZING OUTPUT LEVEL (Q^M)

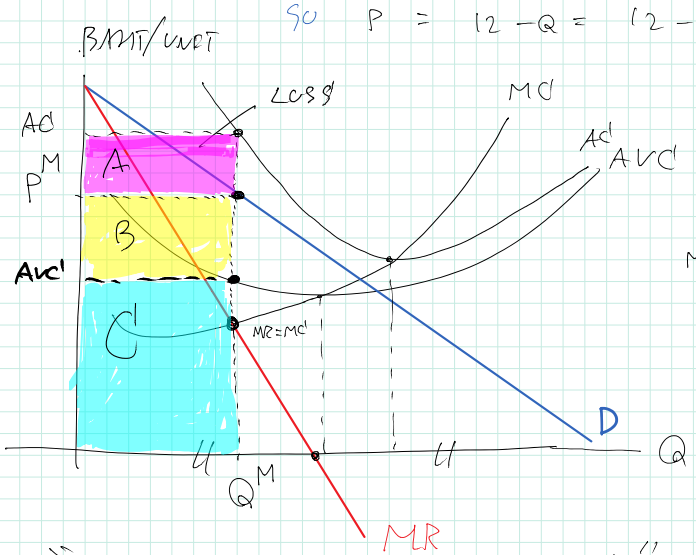
W/ MR-MC RULE, Q^M CAN BE FOUND BY EQUATING MR AND MC :

$$MR = MC$$

$$12 - 2Q = 4$$

$$Q = \frac{12-4}{2} = \frac{8}{2} = 4 \text{ UNITS}$$

SO $P = 12 - Q = 12 - 4 = 8$ BAHT / UNIT



MONOPOLIST IN THE SHORT RUN

MONOPOLIST PRODUCES $Q = Q^M$ AND CHARGES $P = P^M$.

"MONOPOLIST CAN MAKE LOSSES", DEPENDING ON COST STRUCTURE AND DEMAND CURVE HE FACES.

$(B+C) > C$

W/ THIS CASE, AS $P > AVC$ (OR $TR > VC$), HIS LOSSES WHEN CONTINUE TO PRODUCE < HIS LOSS WHEN HE SHUTDOWN

DIY GRAPH THE CASE WHERE MONOPOLIST MAKES POSITIVE PROFIT.

Ton Wrasai at 09-May-17 6:23 PM