Extra practice question 1

Demand : $Q_x = 6 - 2P_x + 4P_y$ - 2 persons

Supply : $P_x = 2Q_x$; $P_x = Q_x$

a) $P_y \uparrow \rightarrow Q_x \uparrow$ ($+4$ is to tell.)

$\therefore$ x, y are substitutes product

For inferiority, you *can't tell.

We *don't know how q_x responds to income.

From now on ~~Q_x~~ $P_y = 5$

$\therefore$ $Q_x =$ ~~6 − 2(5~~) $6 - 2P_x + 4(5)$

$= 26 - 2P_x$

b) market demand

$Q_x = 26 - 2P_x$; $Q_x \geq 0$ when $P_x \leq 13$

$\therefore$ Q_x^M = market demand

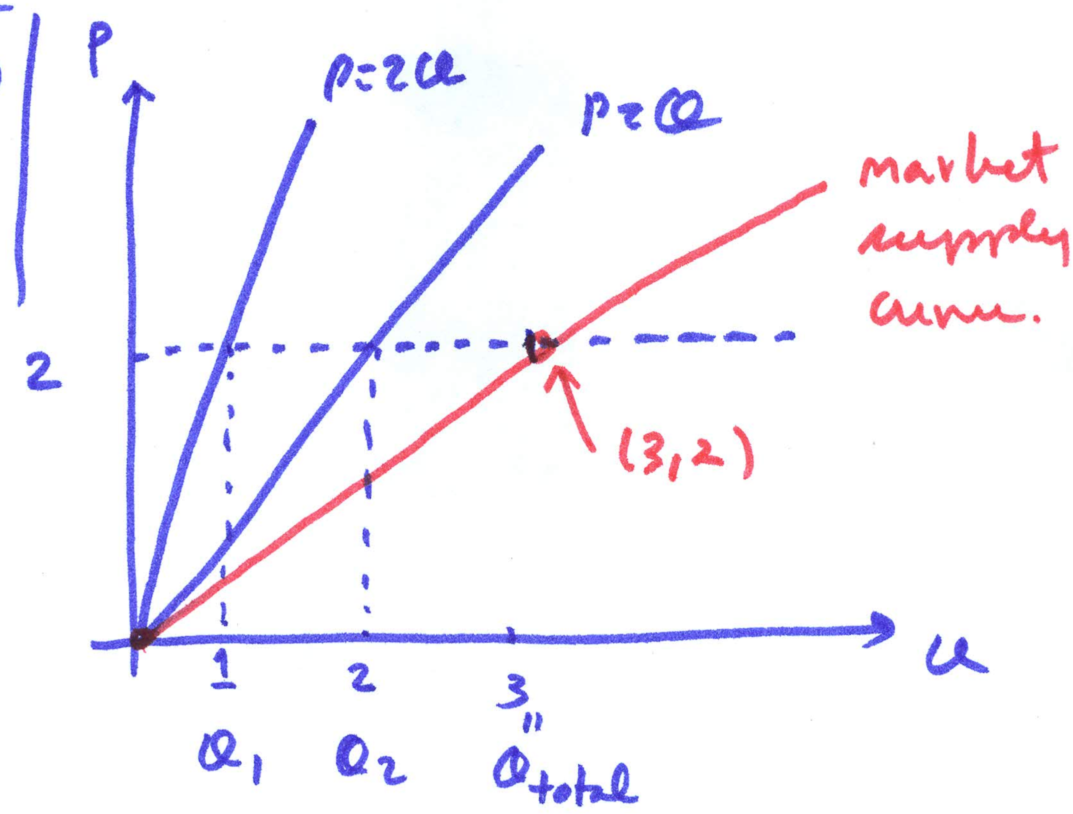
identical
consumers
if 4; use 4.
but here, it's 2.

$= 26 - 2P_x + 26 - 2P_x = 2(26 - 2P_x)$

$= 52 - 4P_x$; $P_x \leq 13$ and 0 ; $x > 13$

(c)

d, e



find slope of the red line

A(3,2) and B(0,0)

slope = $\frac{2}{3}$

$$\therefore (P-0) = +\frac{2}{3}(q-0)$$

$$\boxed{P = \frac{2}{3}Q}$$ → equation for market supply curve

can't do the direct sum when f^n is written in P-eqn form

So, No, it's not that $P = 3Q$.

Alternatively, we know that $Q = \frac{1}{2}P$ and $Q = P$ form

Thus, market supply $= \frac{1}{2}P + P = \frac{3}{2}P$

→ rewrite, we get $P = \frac{2}{3}Q$, the same.

F $Q_d^{total} = Q_s^{total}$

$$52 - 4P_x = \frac{3}{2} P_x$$

$$52 = \frac{11}{2} P_x$$

$$P_x = \frac{104}{11} \#$$

$$Q_{total} = \frac{3}{2}\left(\frac{104}{11}\right) = \frac{3 \cdot 52}{11}$$

$$= \frac{156}{11} \#$$

Since each consumer is identical, they must split the output equally.

$$\therefore \quad Q_d^1 = \frac{156}{22}$$

$$Q_d^2 = \frac{156}{22}$$

how about individualy supply?

plug in $\frac{104}{11}$ into each supply equation you will get $\underline{Q}$ that each supplies.

$\underline{\text{I}}$ since y is substitute product

$P_y \uparrow \Rightarrow$ Demand Curve shift up

(you can try by showing with new number of P_y that intercept on the p-axis of the market demand curve will be increasing.)

$D_x \uparrow \rightarrow$ Fixed Supply

$\rightarrow P_x \uparrow \; ; \; Q_x \uparrow$ in $\underline{\text{equ}^{\underline{m}}}$.

h) $$Q_x^d = 56 - 4P_x^d$$
$$Q_x^s = \frac{3}{2}P_x^s$$

} if No tax use only <u>single</u> price; $P_x^d = P_x^s = P_x$

with tax $\quad P_x^d \neq P_x^s$

i) $$\rightarrow P_x^d = \left(1+\frac{x}{100}\right)P_x^s$$
$$= \left(1+\frac{5}{100}\right)P_x^s = (1.05)P_x^s.$$

k) $$\rightarrow Q_x^d = 52 - 4\underbrace{(1.05)}P_x^s$$
$$Q_x^s = \frac{3}{2}P_x^s$$

$$Q_x^d = Q_x^s$$

$$52 - 4.2P_x^s = \frac{3}{2}P_x^s$$

$$\therefore \quad P_x^s = \frac{52 \times 2}{11.4} = \frac{104}{11.4}$$

$$P_x^d = (1.05)\left(\frac{104}{11.4}\right) = \ldots\ldots$$

<u>Note:</u> $$P_x^d - P_x^s = (0.05)\left(\frac{104}{11.4}\right) = 0.05 \cdot P_x^s.$$

$$p^d = (1.05)\left(\frac{104}{11.4}\right)$$

$$p^s = \frac{104}{11.4}$$

initial price is $\frac{104}{11}$

new price − old price

$\therefore$ Consumer burden $= (1.05)\left(\frac{104}{11.4}\right) - \frac{104}{11}$

per unit of output.

~~the price − ol~~

producer burden $= \frac{104}{11} - \frac{104}{11.4}$.

$$\text{Tax Collected} = (0.05)\left(\frac{104}{11.4}\right) \cdot Q$$

$$Q = \frac{3}{2}\left(\frac{104}{11.4}\right) = \frac{3}{2} \cdot p^s$$

Sum Total tax $= (0.05)\left(\frac{104}{11.4}\right) \cdot \left(\frac{3}{2} \cdot \frac{104}{11.4}\right)$

Tax paid by consumer $= \left((1.05)\frac{104}{11.4} - \frac{104}{11}\right)\left(\frac{3}{2} \cdot \frac{104}{11.4}\right)$.

Tax paid by producer $= \left(\frac{104}{11} - \frac{104}{11.4}\right)\left(\frac{3}{2} \cdot \frac{104}{11.4}\right)$

Ans