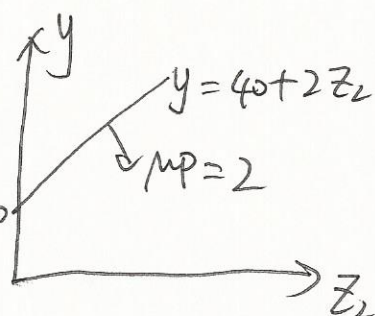


1. a). $y = 4Z_1 + 2Z_2$

Fix $Z_1 = 10$, then $y = 40 + 2Z_2$

short-run production



b). For y cakes, need

$$Z_2 = \frac{y-40}{2} = \frac{y}{2} - 20$$

only if $y > 40$, otherwise $Z_2 = 0$

↳ Bob's working hours

If $Z_2 > 0$, then $y > 40$, $TC(y) = W_1 Z_1 + W_2 Z_2$

$$= 20(10) + 20Z_2$$

$$= 200 + 20\left(\frac{y}{2} - 20\right)$$

$$= 200 + 10y - 400$$

$$= 10y - 200$$

If $y \leq 40$, $TC = W_1 Z_1 = 200$

$$\Rightarrow TC = \begin{cases} 200 & y \leq 40 \\ 10y - 200 & y > 40 \end{cases}$$

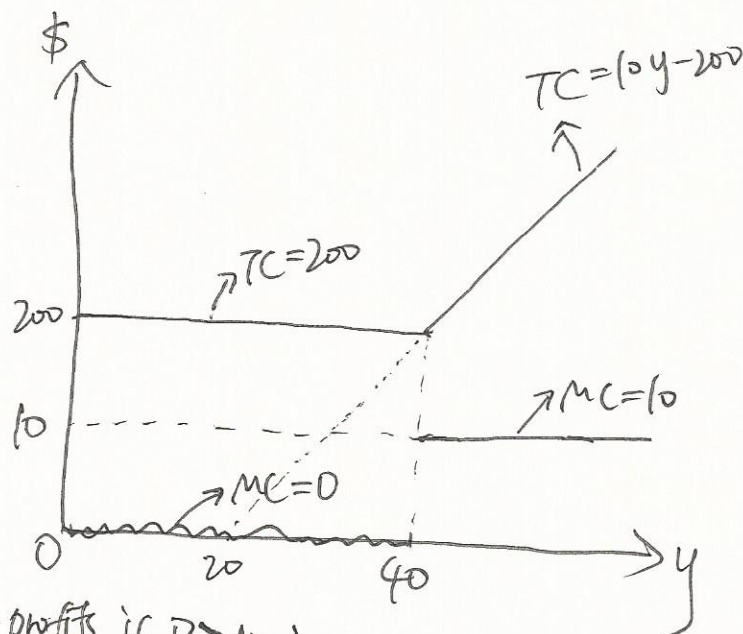
c). $\Rightarrow MC = \begin{cases} 0 & y \leq 40 \\ 10 & y > 40 \end{cases}$

d). If $p = 8$, then $y = 40$!

why? If $y > 40$, $p = 8 < MC = 10$

(make profits if $p > MC$)

So $TR = 8(40) = 320$, $TC = 200$, $\pi = TR - TC = 120$

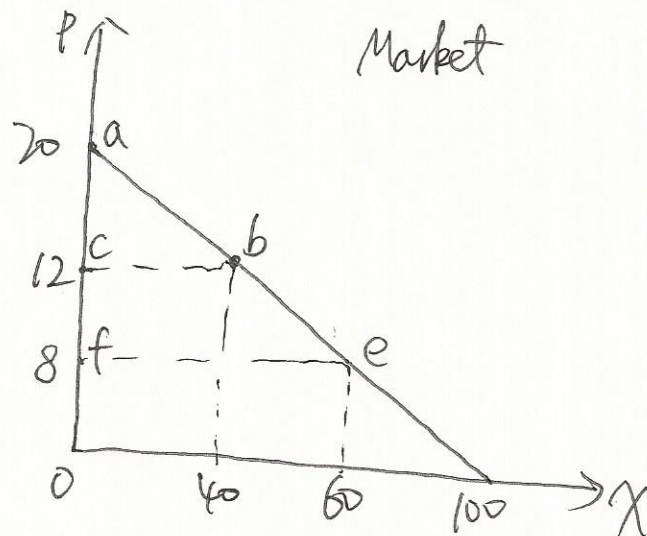
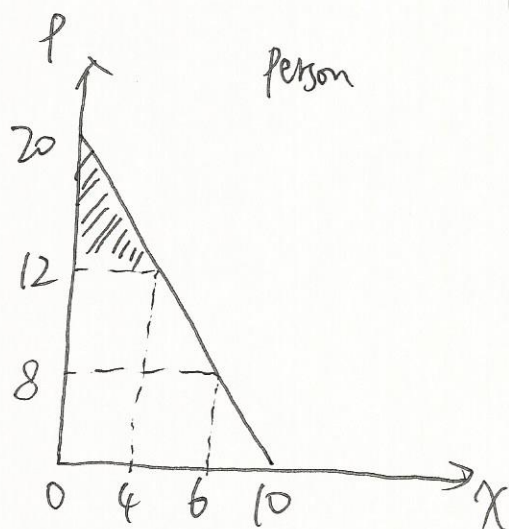


2. a) Each person: $x = 10 - \frac{p}{2}$

Aggregate Demand: $X_{agg} = 10x = 100 - 5p$ (Horizontal summation)

$$5p = 100 - X_{agg}$$

$$p = 20 - \frac{1}{5}X_{agg}$$



b). If $p=12$, total CS = 10 • each person's CS

$$= 10 \cdot \left(\frac{1}{2} (20-12) \cdot 4 \right)$$

$$= 10 \cdot \left(\frac{1}{2} \cdot 8 \cdot 4 \right)$$

$$= \$160 = abc$$

c). If $p \downarrow$ to 8, $X_{agg} = 100 - 5(8) = 60$

New CS = $def = \frac{1}{2} (20-8) \cdot 60 = \360

$$\Delta CS = 360 - 160 = \$200 = cbef$$

d). For market: $E_D = \frac{\Delta X_{agg}}{\Delta p} \cdot \frac{p}{X_{agg}} = -5 \cdot \frac{8}{60} = -\frac{2}{3}$

For individual: $E = \frac{\Delta x}{\Delta p} \cdot \frac{p}{x} = -\frac{1}{2} \cdot \frac{8}{6} = -\frac{2}{3}$

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