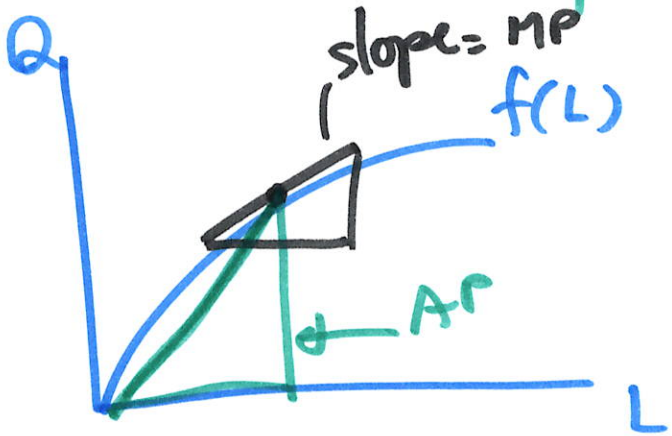
Given K is fixed.

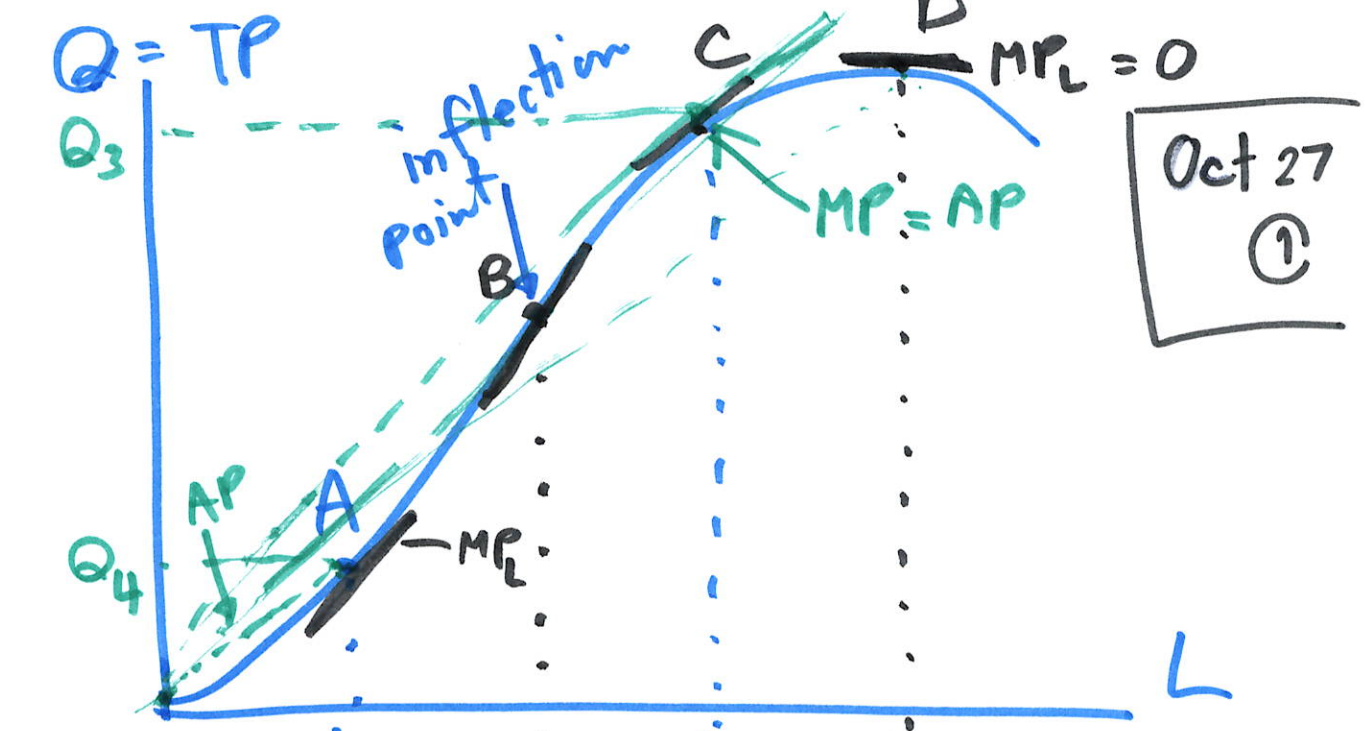
$Q = f(L)$: TP

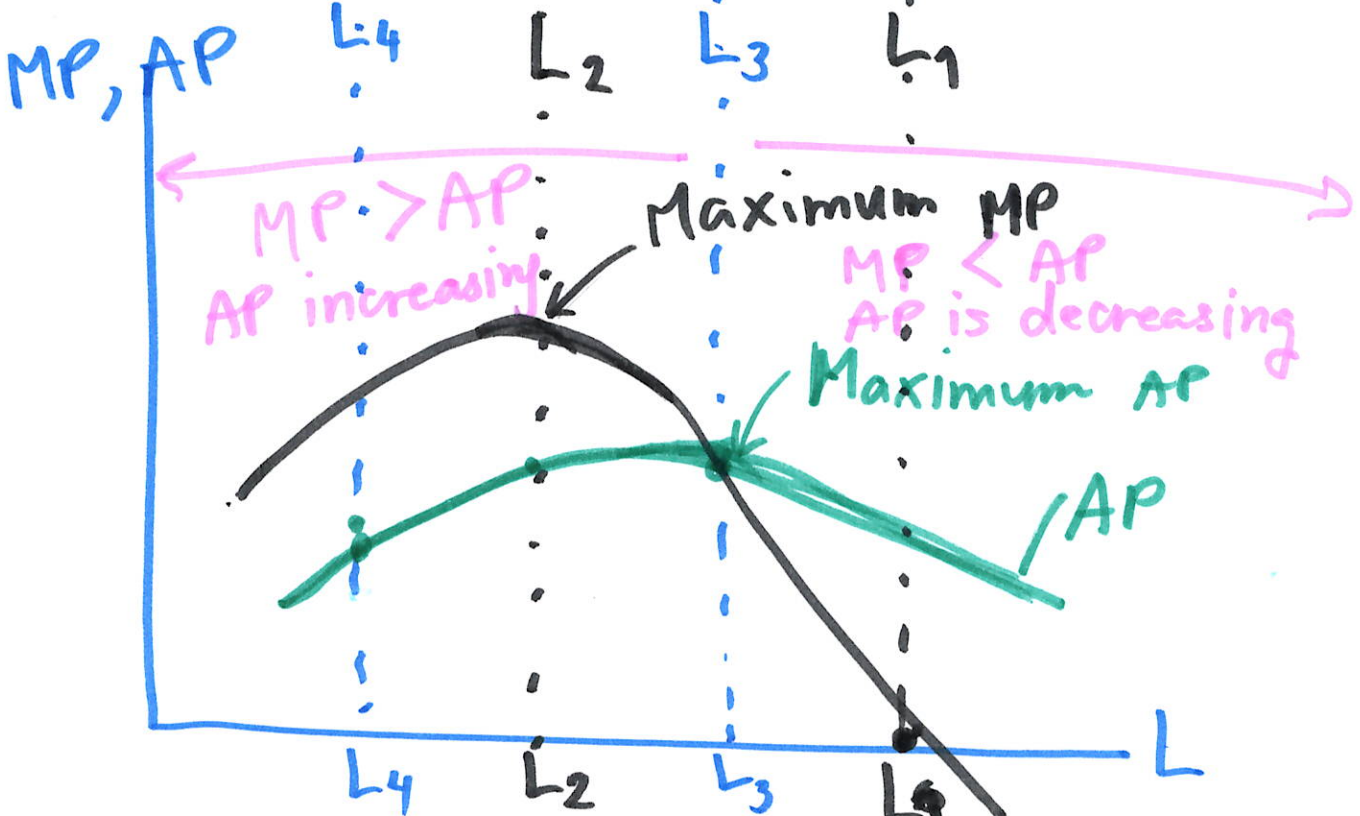
$\frac{Q}{L}$ = AP

$\frac{\Delta Q}{\Delta L}$ = MP = slope

ex. At A, $AP = \frac{Q_4}{L_4}$







Oct 27
①

Cost : $C = f(Q)$

Production
$Q = f(L)$

- Total cost: TC

$$TC = TFC + TVC$$

- Average cost:

$$ATC = \frac{TC}{Q} = \frac{TFC}{Q} + \frac{TVC}{Q} = AFC + AVC$$

- Marginal cost:

$$MC = \frac{\Delta TC}{\Delta Q} = \frac{\Delta(TFC + TVC)}{\Delta Q} = \frac{\Delta TFC}{\Delta Q} + \frac{\Delta TVC}{\Delta Q}$$

($\Delta TFC = 0$)

Ex

$$TC(Q) = TFC(Q) + TVC(Q)$$

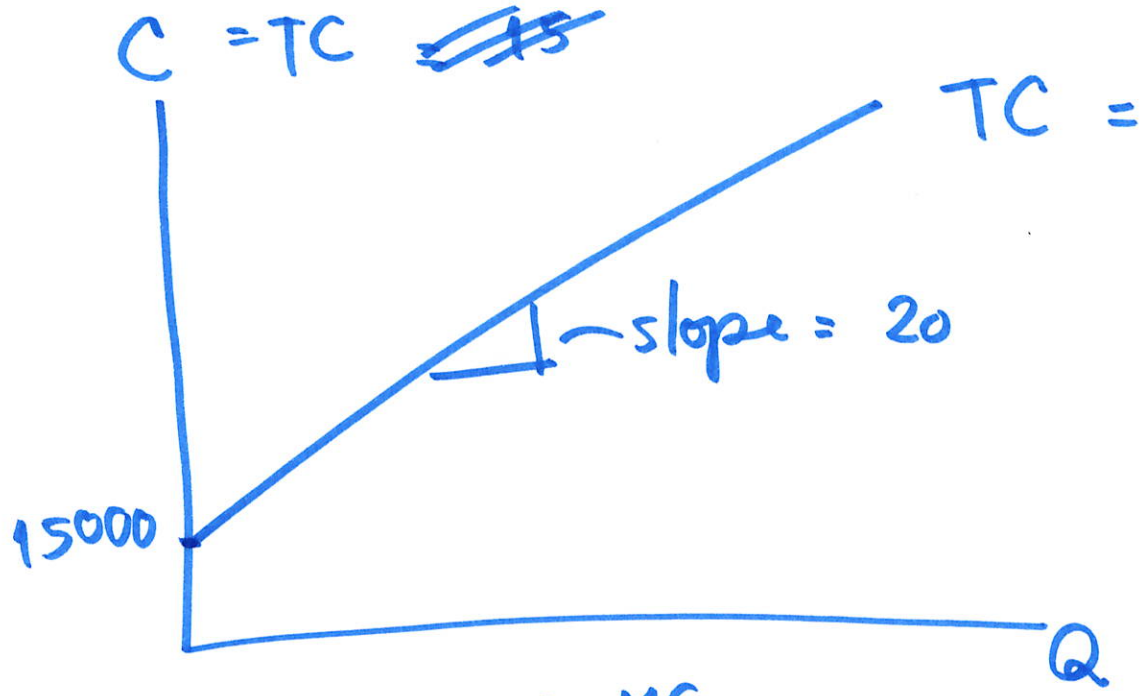
$$C(Q) = \underbrace{15{,}000}_{\text{Rent}} + \underbrace{VC}_{\text{cost per cup of coffee}} \times Q$$

$$TC(Q) = 15{,}000 + 20Q$$

$$\Rightarrow ATC = \frac{15000 + 20Q}{Q} = \underbrace{\frac{15000}{Q}}_{AFC} + \underbrace{20}_{AVC}$$

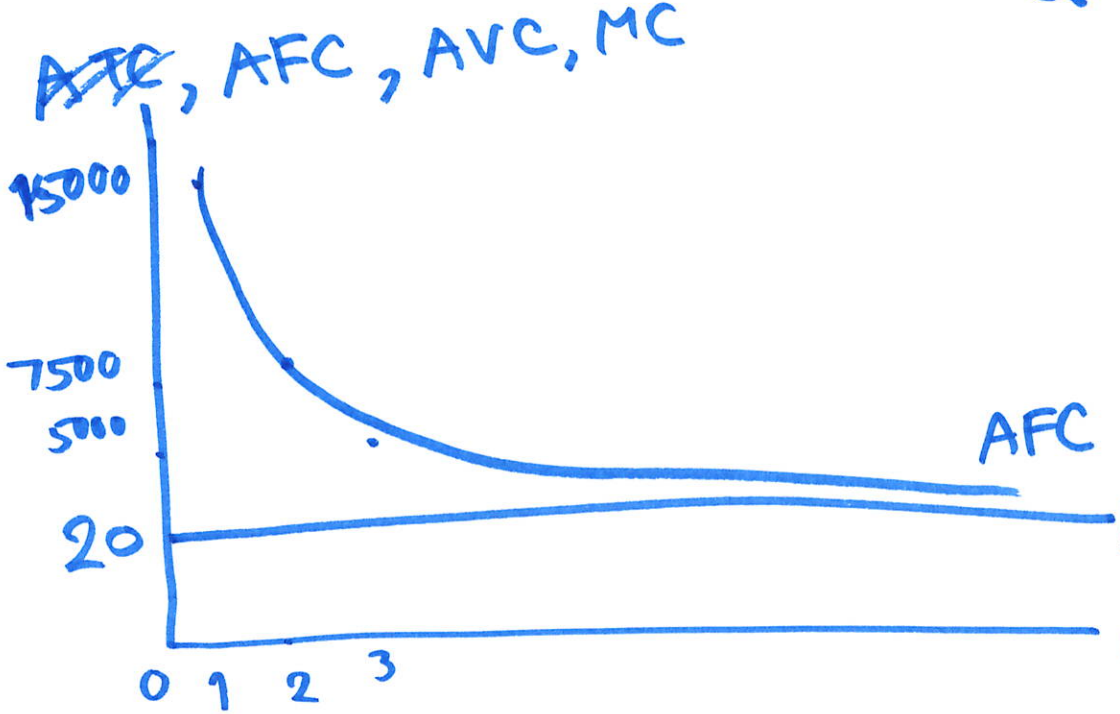
$$\Rightarrow MC = \frac{\Delta TC}{\Delta Q} = \frac{d(15000 + 20Q)}{dQ} = 20$$

$$= \frac{d(TC)}{dQ}$$



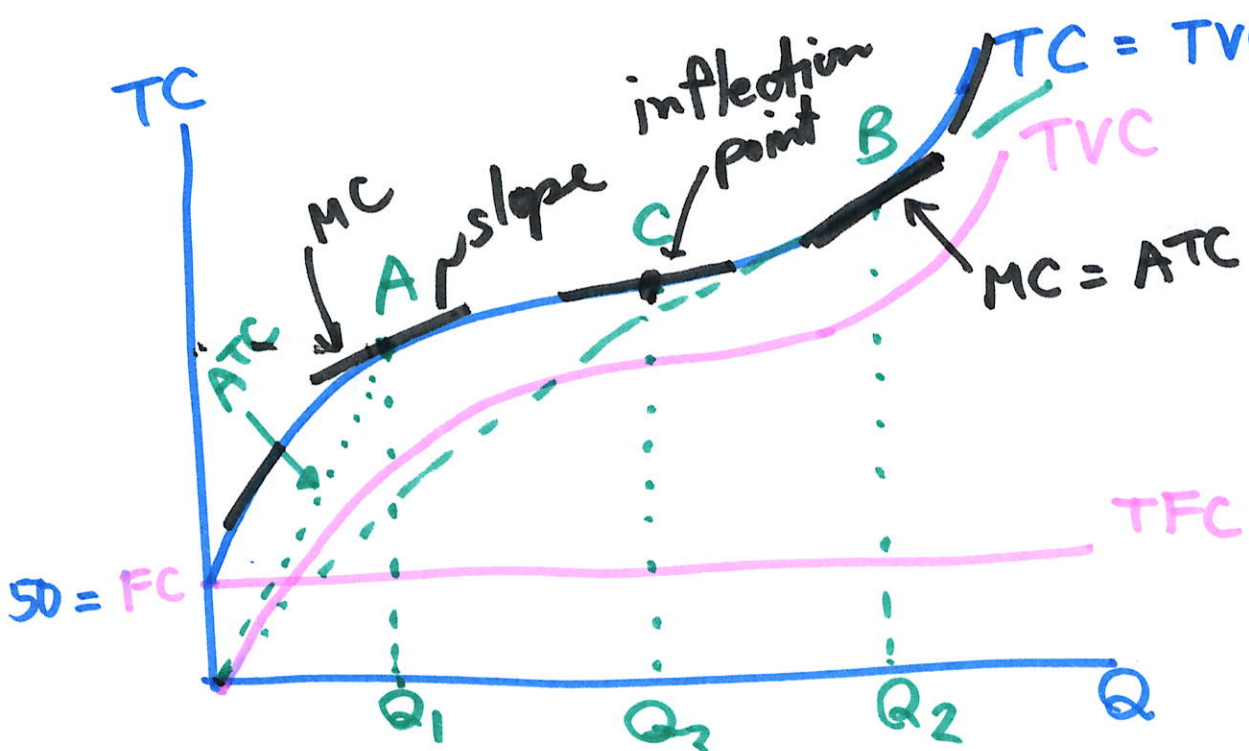
$$TC = \underbrace{15000}_{TFC} + \underbrace{20Q}_{TVC}$$

$$ATC = \underbrace{\frac{15000}{Q}}_{AFC} + \underbrace{20}_{AVC}$$



$$MC = \frac{d(TC)}{dQ} = 20$$

← Not always the case!



$$ATC = \frac{TVC}{Q} + \frac{TFC}{Q}$$

$$= AVC + AFC$$

$$AFC = \frac{50}{Q}$$

$$MC = \frac{\Delta(TC)}{\Delta Q}$$

= slope of TC