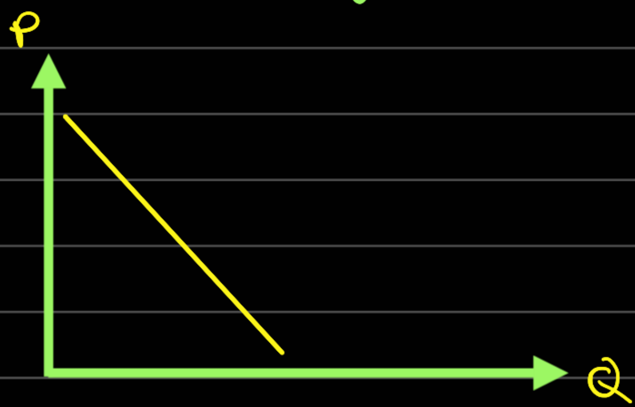
Day - 11

→ $Q_D = Q(P, m, P_{oth}, \theta)$

$= \alpha - \beta P + \gamma m + \delta P_{oth} + \theta$

This is direct demand function

$P \rightarrow$ Price of good
$m \rightarrow$ money income
$P_{oth} \rightarrow$ price of other related goods
$\theta \rightarrow$ other factors

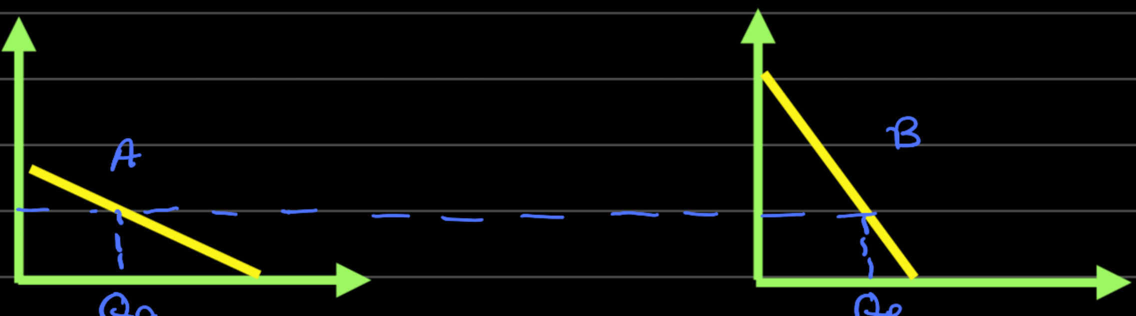


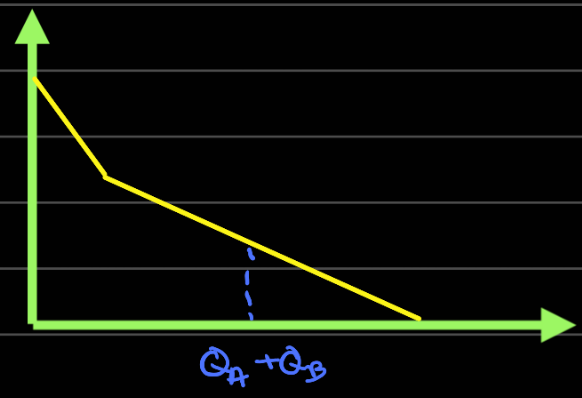
when demand curve is depicted as

$P = P(Q, m, P_{other}, \theta)$
$= a - bQ + cm + dP_{oth} + \theta$

It is called inverse demand curve.

→ market DD curve from inverse demand curve -



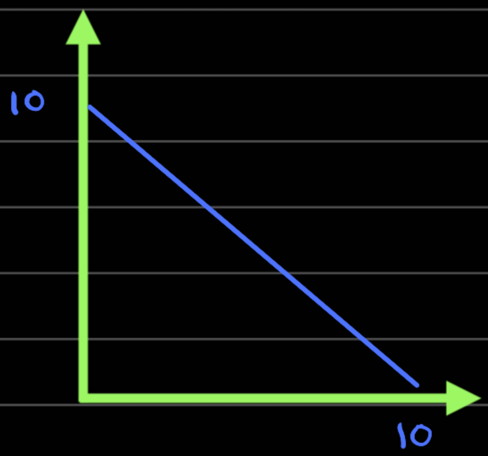


(we add them)

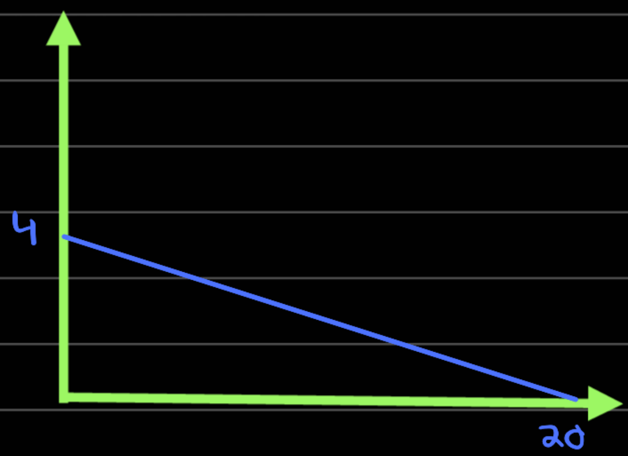
→ Problem:

$Q_D^A = 10 - P$ $\quad\downarrow\quad$ $Q_D^A = 10 - Q$

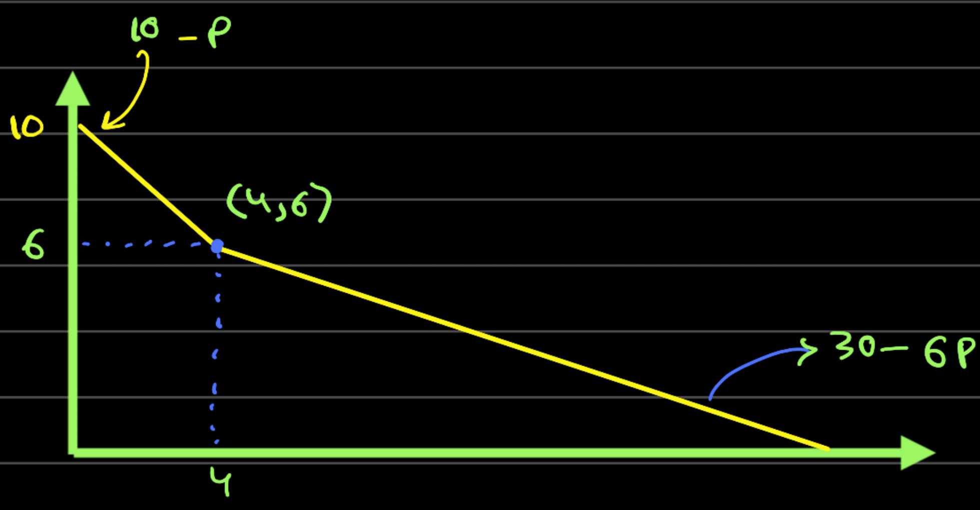
$Q_D^B = 20 - 5P$ $\quad\downarrow\quad$ $Q_D^B = 4 - 0.2Q$



A



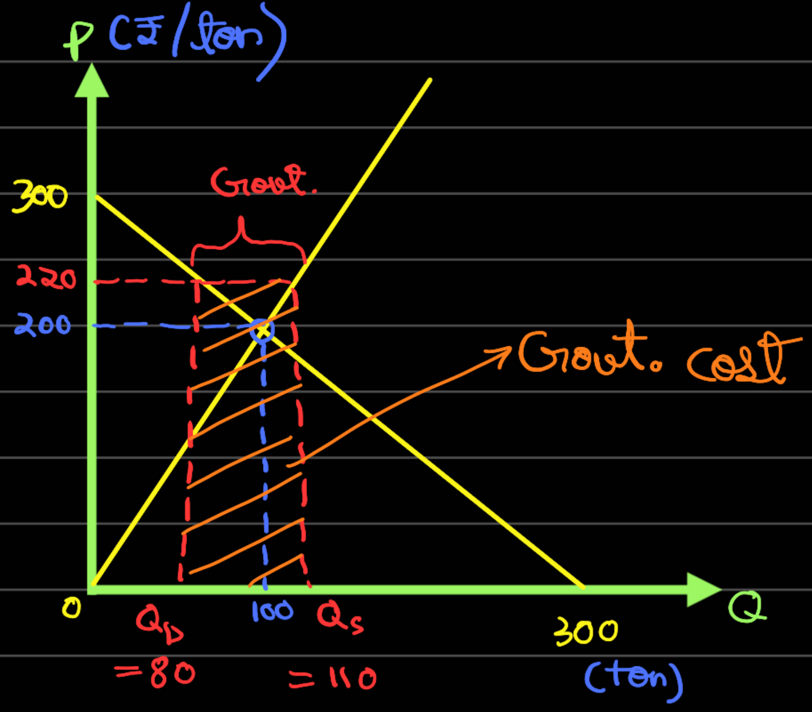
B



(just add the Q_D vs P eq^ns)

→ Problem:

$P_S = 2Q_S \qquad P_D = 300 - Q_D$



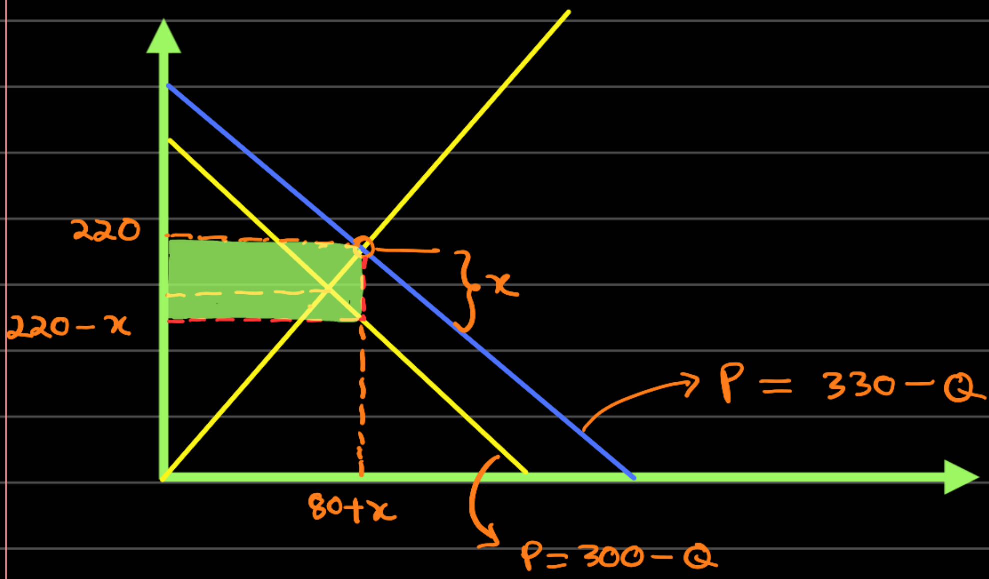
$2Q_{eq} = 300 - Q_{eq}$

$\Rightarrow Q_{eq} = 100$ ton

$P_{eq} = ₹200/\text{ton}$

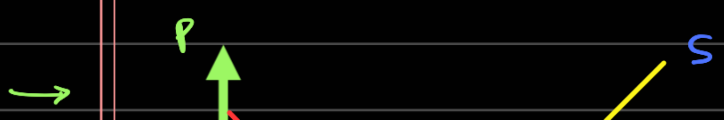
Govt. cost $= 220 \times (110 - 80)$

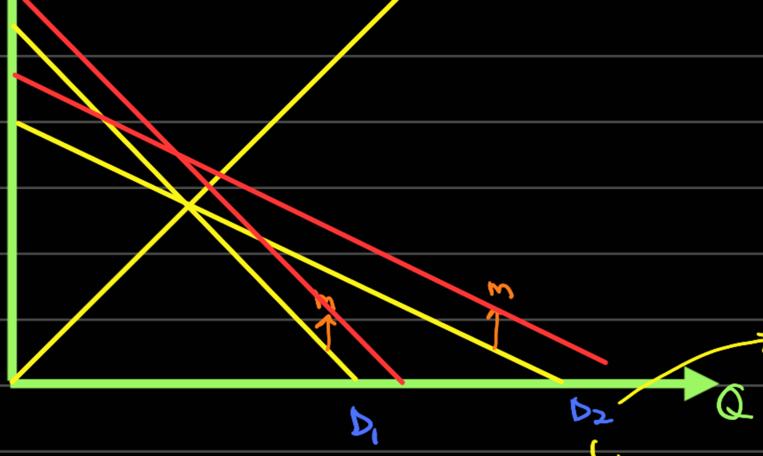
$= ₹\,6600$



$80 + x = 110 \Rightarrow x = 30$

Cost Borne $= ₹\,30 \times 110 = ₹3300$





→ elastic

(inelastic)

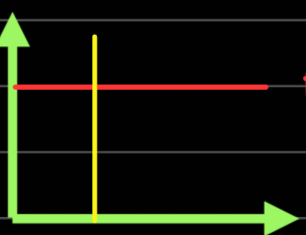
↳ more sensitivity to price change w.r.t D_1

Elasticity, $E_{P_x} = - \dfrac{\text{\% Change in demand}}{\text{\% change in Price}}$

$$= - \frac{Q_1 - Q_0 / Q_0}{P_1 - P_0 / P_0} \quad \text{(arc elasticity)}$$

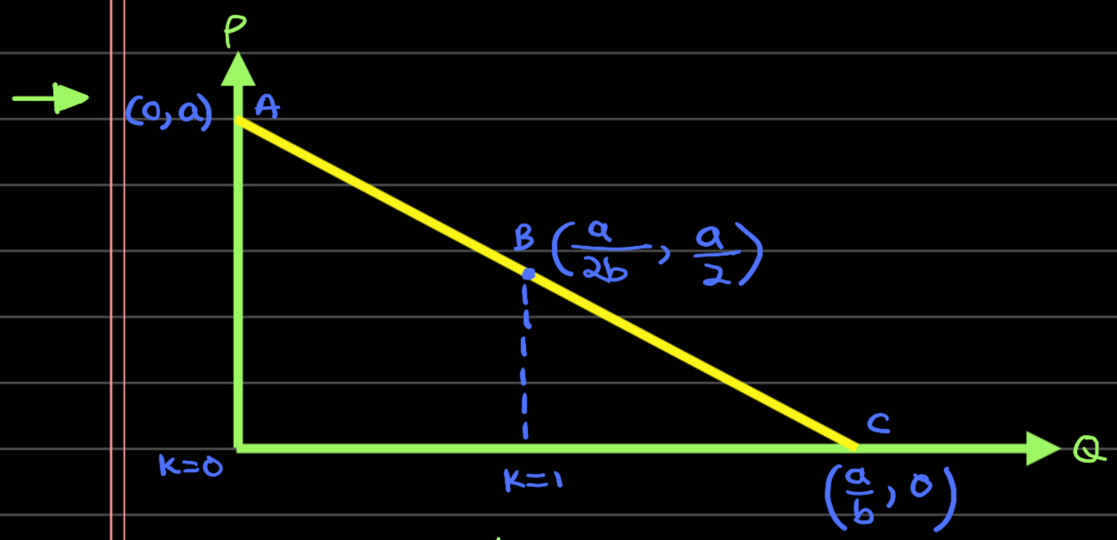
<u>Calculus way</u> $\quad E_p = - \dfrac{dQ}{dP} \dfrac{P}{Q}$

(point elasticity)



Perfectly elastic

Perfectly inelastice



$P = a - bQ$

$Q \in [0, a/b]$

Let $Q = \dfrac{ka}{2b}$

$0 < k < 1 \longrightarrow$ A – B zone

$1 < k < 2 \longrightarrow$ B – C zone

$k = 0 \longrightarrow A$

$k = 1 \longrightarrow B$

$k = 2 \longrightarrow C$

$$E_p = -\frac{dQ}{dP}\,\frac{P}{Q} = \frac{a - bQ}{bQ}$$

$$\Rightarrow \boxed{E_p = \frac{a}{bQ} - 1}$$

A-zone : $Q \to 0 \Rightarrow E_p \to \infty$

AB – zone : $\boxed{E_p = \dfrac{2}{k} - 1}$

$0 < k < 1$ so $E_p > 1$

B – zone : $k = 1$ so $E_p = 1$

BC – zone : $1 < k < 2$ so $E_p < 1$

C – zone : $k = 2$ so $E_p = 0$