5/12/2020
Lecture # 2

Demand (4/6)

$Q^D = 1000 - 200P$

$\Rightarrow \quad 200P = 1000 - Q^D$

$\Rightarrow \quad P(Q) = \frac{1000}{200} - \frac{1}{200} Q^D$

$\Rightarrow \quad P(Q) = 5 - \frac{1}{200} Q^D \qquad$ where, $\frac{1}{200} = .005$

Note:- If we want to plot demand curve.

① $\Rightarrow$ set $P(Q) = 0$

$\Rightarrow \quad 0 = 5 - \frac{1}{200} Q^D$

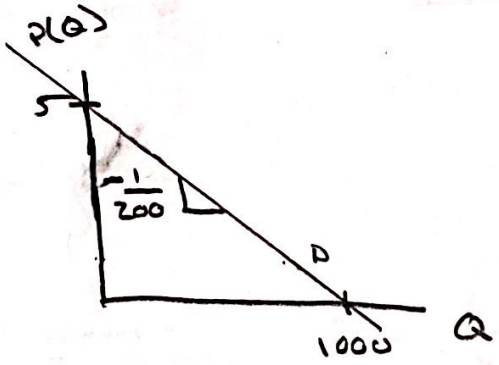
$\Rightarrow \quad \frac{1}{200} Q^D = 5$

$\Rightarrow \quad Q^D = 1000$

② set $Q^D = 0$

$\Rightarrow \quad P(Q) = 5$

$\Rightarrow$

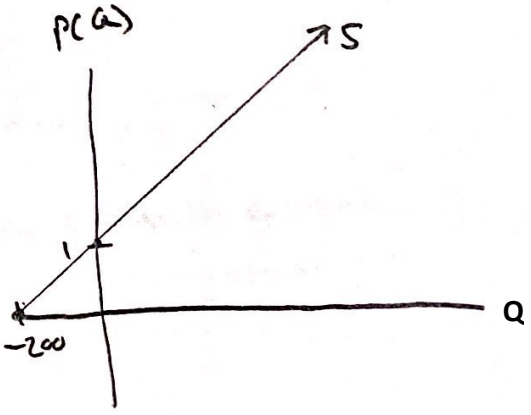


Supply (3/5)

$Q^S = 200P - 200$

$\Rightarrow \quad 200P = Q^S + 200$

$\Rightarrow \quad P(Q) = \frac{1}{200} Q^S + 1$



Find Intercepts

① set $P(Q) = 0$

$\Rightarrow \quad -200 = Q^S$

② set $Q^S = 0$

$\Rightarrow \quad P(Q) = 1$

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Elasticity (7/14)

$$E = \frac{\%\Delta Q}{\%\Delta P} \quad \text{or} \quad E = \frac{\Delta Q/Q}{\Delta P/P}$$

$$\Rightarrow = \frac{\Delta Q}{\Delta P}\,\frac{P}{Q}$$

$$= \frac{\partial Q^*(P,w)}{\partial P}\,\frac{P}{Q^*(P,w)}$$

Example

Assume we have our optimal demands in terms of the good's own price (P_i), the consumers income (M), & their preference parameter for that good (α)

$$\Rightarrow \quad Q^*(P,w,\alpha) = \frac{\alpha}{P} w$$

Note: ① $P \uparrow$, $Q^* \downarrow$

② $w \uparrow$, $Q^* \uparrow$

③ $\alpha \uparrow$, $Q^* \uparrow$

$$\Rightarrow \frac{\partial Q^*(P,w,\alpha)}{\partial P} = -\frac{\alpha}{P^2} w$$

$$\Rightarrow \quad E_P = \left(-\frac{\alpha}{P^2} w\right) \frac{P}{\left(\frac{\alpha w}{P}\right)} = \left(-\frac{\alpha w}{P^2}\right)\left(\frac{P^2}{\alpha w}\right)$$

$$= -1$$

where, we take the absolute value

$$|-1| = 1$$

$\Rightarrow$ This Demand is unit elastic

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