(23)

Elasticity & its Applications

↳ **Elasticity** → A measure of responsiveness to the qty. supplied or qty. demanded when there is a change in one of its determinants.

↳ **Price elasticity of demand** → how much the qty. demanded ~~changes~~ responds for a change in price. (fall in price ⇒ ↑ demand ← (law of demand)

$$= \frac{\% \text{ change in qty demanded}}{\% \text{ change in price.}}$$

Price elasticity of demand

↓

elastic

↓

if Δqty. demanded essentially changes.

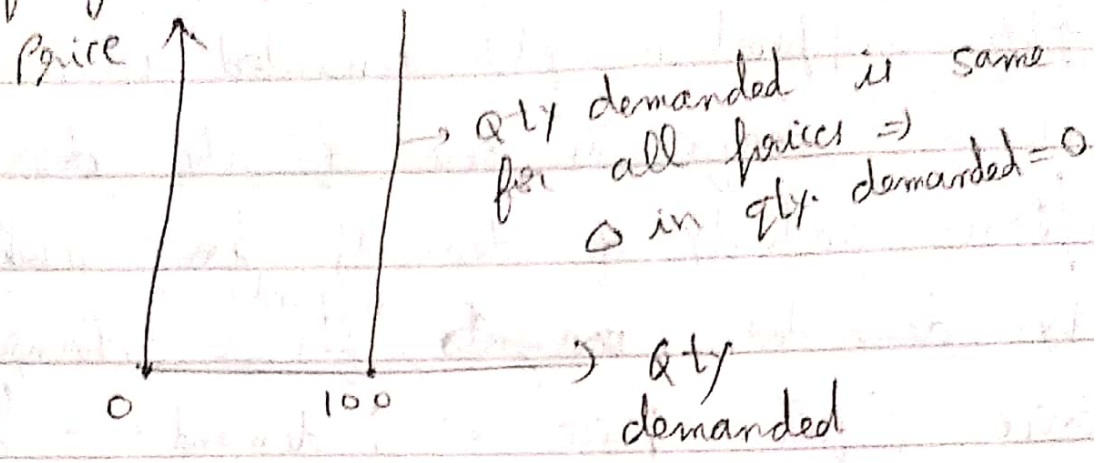
Price elasticity of demand → **inelastic**

if Δqty. demanded slightly changes.

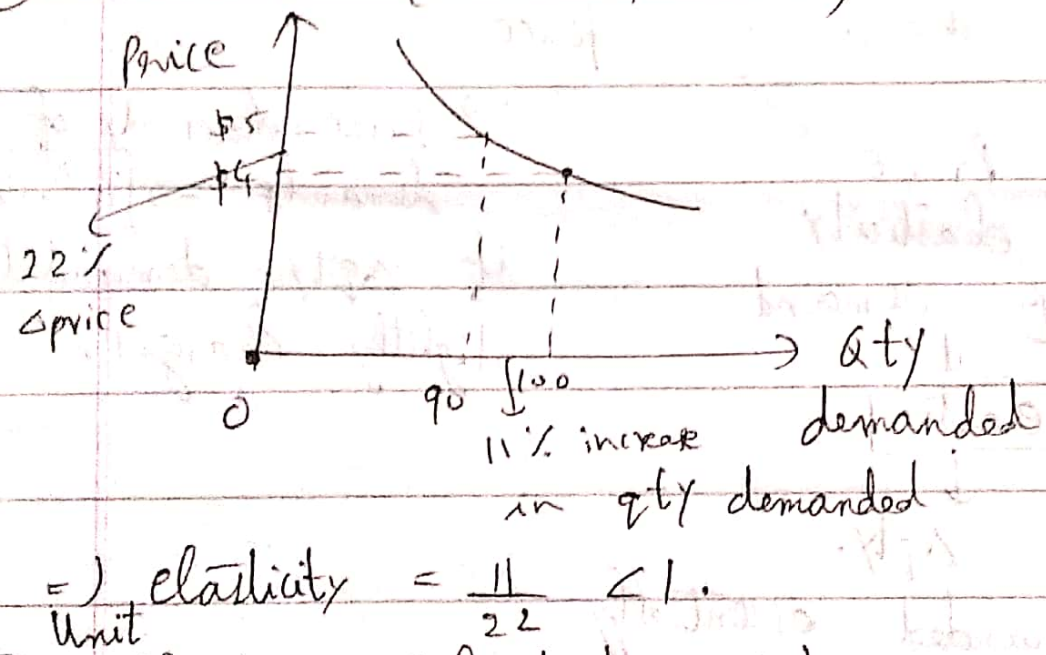
↳ Price elasticity of demand helps us understand how much ₹ful are willing to pay when ↓ demand..

↳ Types of price elasticity of demand:

① Perfectly inelastic (elasticity = 0)

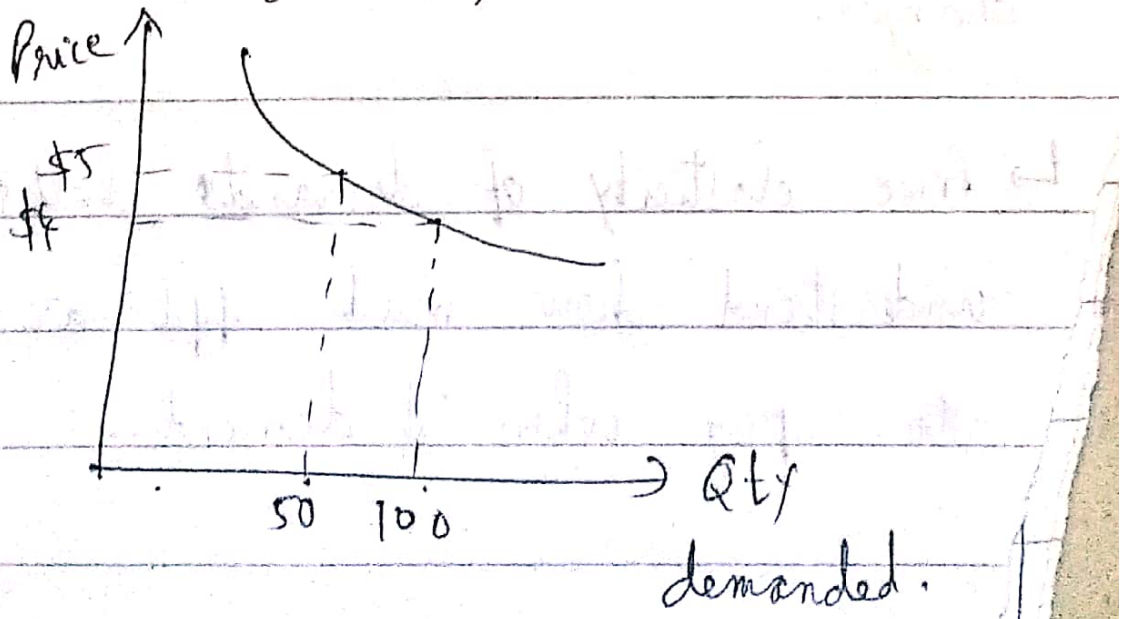


② Inelastic (elasticity < 1)

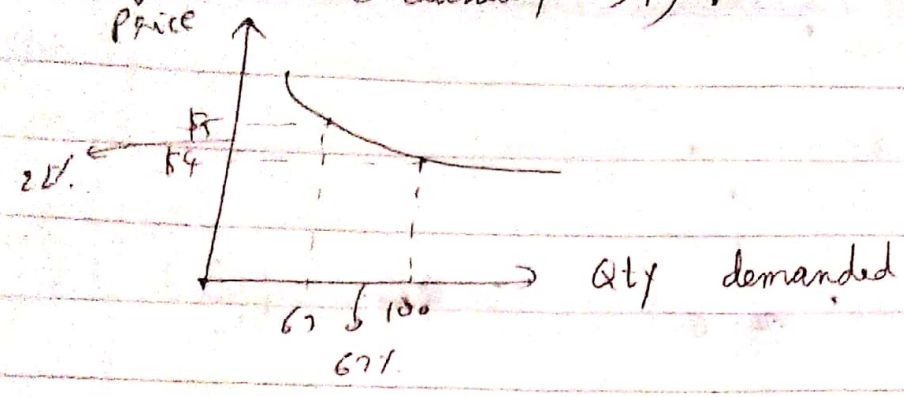


⇒ elasticity = $\frac{11}{22} < 1$.
Unit

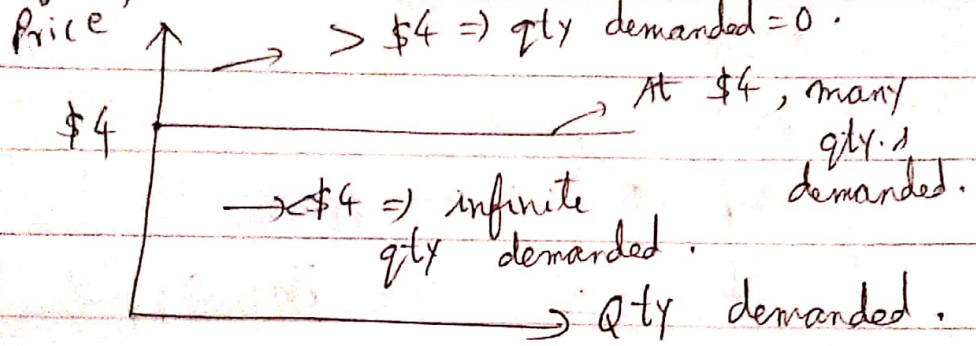
③ Elastic (elasticity = 1)



④ Elastic (elasticity > 1) :



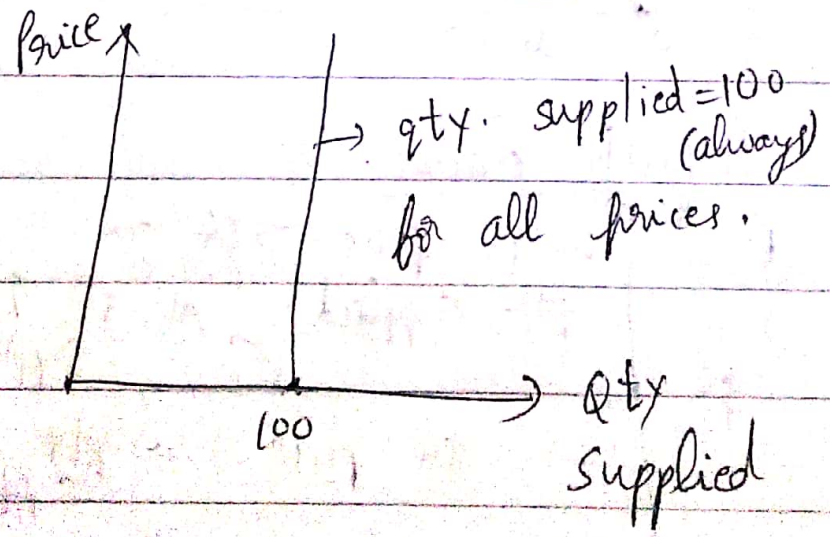
⑤ Perfectly elastic →



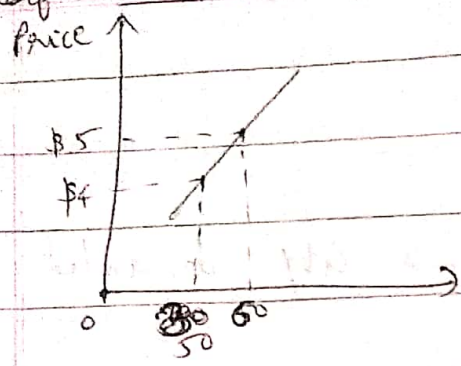
↳ Price elasticity of supply

$$= \frac{\% \text{ change in qty supplied}}{\% \text{ change in price.}}$$

① Perfectly inelastic supply :



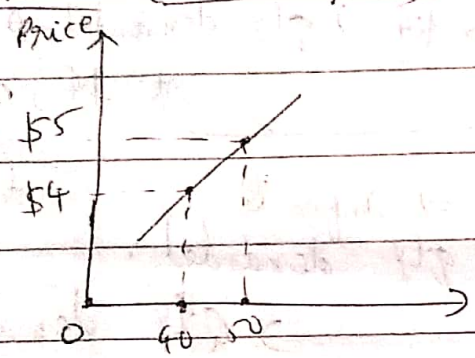
② Inelastic: (elasticity < 1)



$\frac{1}{4} \times 100$

$\frac{2}{3}$

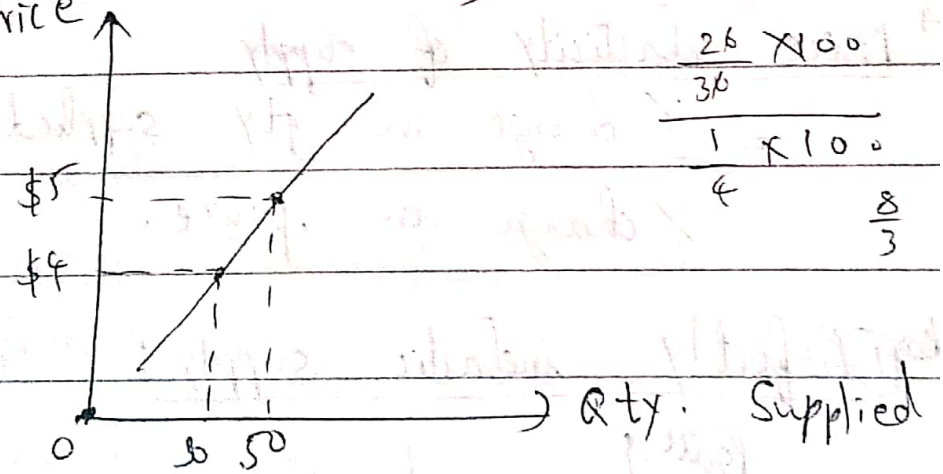
③ Unit Elastic (elasticity = 1)



$\frac{10}{40} \times 100$

$\frac{1}{4} \times 100$

④ Elastic (elasticity > 1)

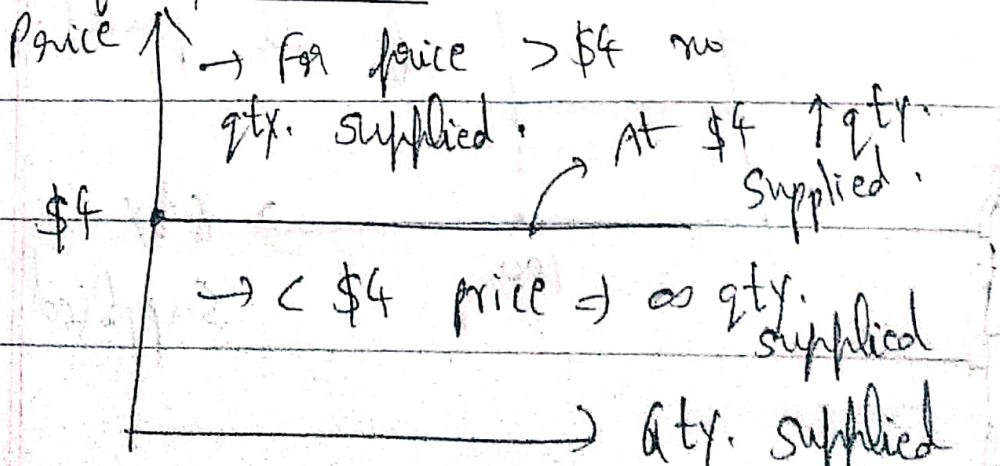


$\frac{26}{30} \times 100$

$\frac{1}{4} \times 100$

$\frac{8}{3}$

⑤ Perfectly elastic:



→ For price > $4 no qty. supplied.

At $4 ↑ qty. supplied.

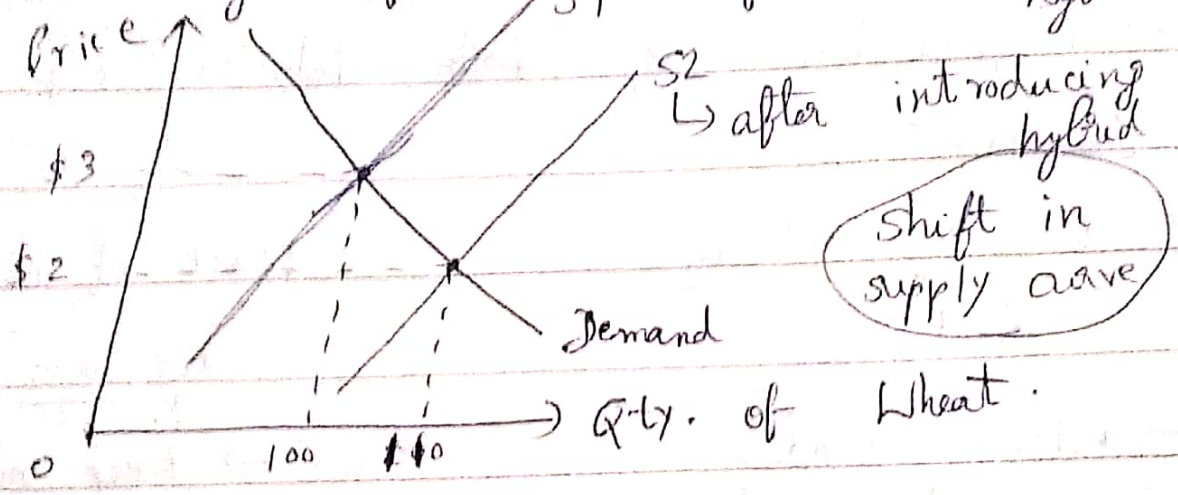
→ < $4 price ⇒ ∞ qty. supplied

Applications of demand, supply and elasticity:

① Farming Technology

→ New hybrid technology is introduced ⇒ ↑ qty. of wheat, rice, ragi, farm products produced by farmers.

→



→ Result: ① Equilibrium price drops

② ⇒ farmer's revenue drops.

↳ = Qtx × Price

For S_1 := 100 × 3 = $300

For S_2 = 110 × 2 = $220.

③ Price elasticity of demand does not change as qty. of wheat demanded by ppl → same.

④ Bad news for farmers.

⑤ But, consumers can pay less and buy ↑ qty of wheat.

→ US → many ↑ due to this.

⑥ So, farmers can produce ↓ wheat & corn.
↑ revenue.

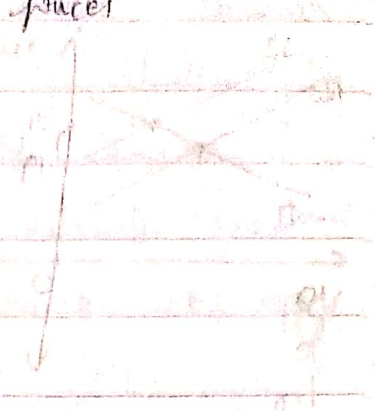
② OPEC's Price Control:

→ Organisation of Petroleum Exporting Countries:

· Price of oil in short-run	· Price of oil in long run
→ When suddenly price ↑ed, takes time for ppl to react & demand to ↓. So, demand & supply remain inelastic as price elasticity of demand doesn't change much.	→ Keep market balanced. → Supply & demand are elastic → As over a long period of time, when prices have ↑ed → affects qty. demand → affects price elasticity of demand.
→ So for short period of time, OPEC decreased qty of oil supplied & thus ↑ed price.	

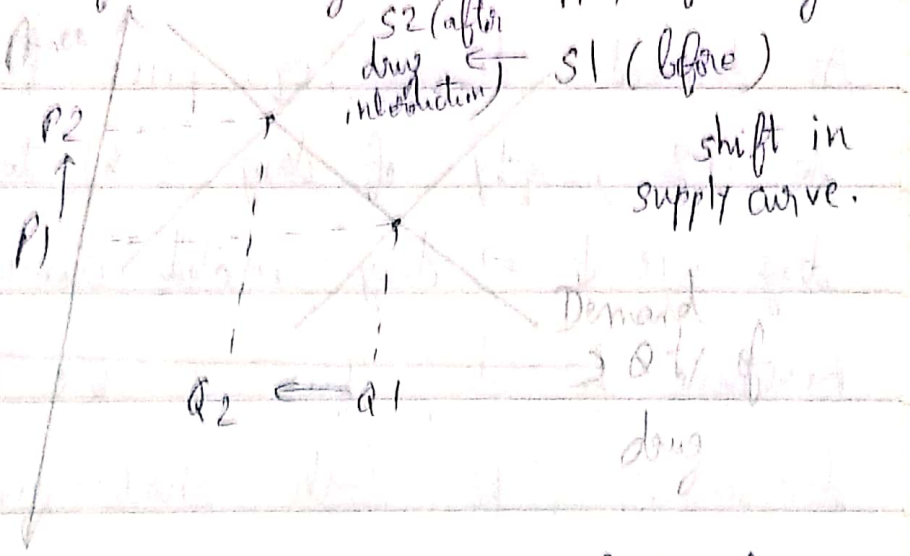
Short-run
→ So, large ↑ in prices.

Long-Run
→ So, small ↑ in prices



(3) Drug use & Drug-Related Crime:

• Drug interdiction → Govt. stops the supply of a few drugs ⇒ Supply of drugs ↓



① S1 → S2 ⇒ Q1 → Q2 (Qty of drugs / drug use decreases)

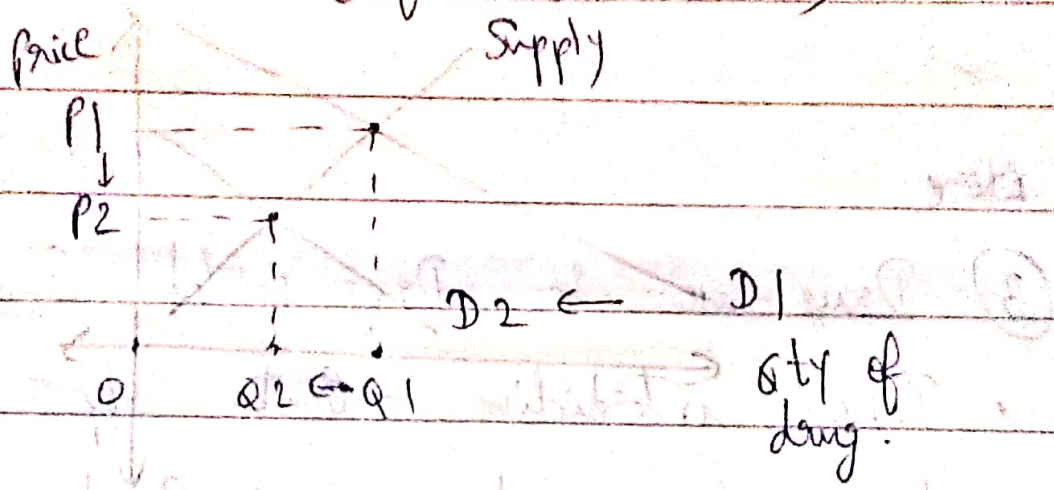
② P1 → P2 ⇒ price ↑ by a lot.

⇒ drug-related crimes ↑

③ Demand & Supply are inelastic for short run.
So, drug-related crime ↑ set for short run, decreases for long-run. → elastic → P2 − P1 ↓ ⇒ drug-related crimes ↓.

④ Inelastic → P2 × Q2 > P1 × Q1.
↑ revenue for drug firms.

· Drug education ⇒ Demand for drugs ↓ set as ppl are aware. (from D1 to D2)



As demand decreases, eq. price from P1 to P2, qty. of drug → Q1 to Q2 ⇒ drug use ↓ ⇒ drug-related crimes ↓.
Revenue for drug firm = P2 × Q2 < P1 × Q1 decreases. (for both short-run & long-run).