- Elasticity of Demand
  - price elasticity of demand : $\varepsilon_d = \frac{\%\Delta Q_d}{\%\Delta P}$
  - income " : $\varepsilon_I = \frac{\%\Delta Q_d}{\%\Delta I}$
  - cross-price " : $\varepsilon_{XY} = \frac{\%\Delta Q_d^X}{\%\Delta P_Y}$

Today. Elasticity of Supply

- Price elasticity of supply : ε_s

- Consumer surplus & producer surplus.

Calculation of ε_s

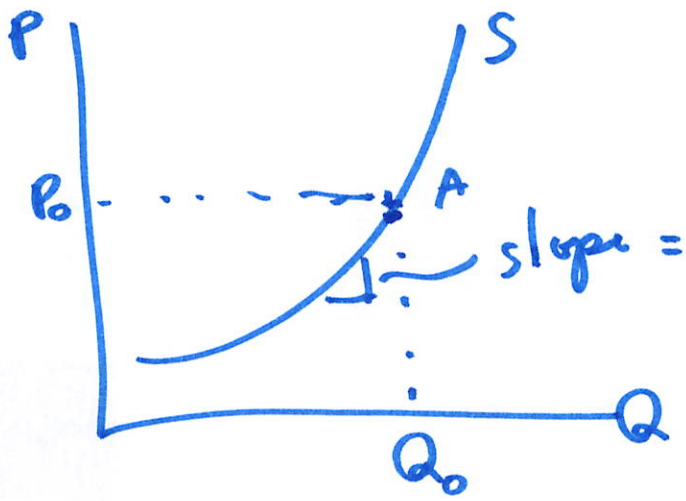
1. Linear Supply Curve:

$$\varepsilon_s = \frac{\% \Delta Q_s}{\% \Delta P} = \frac{\Delta Q_s / \bar{Q}_s}{\Delta P / \bar{P}}$$

where $\bar{Q}_s = \frac{Q_s^1 + Q_s^2}{2}$

$\bar{P} = \frac{P^1 + P^2}{2}$

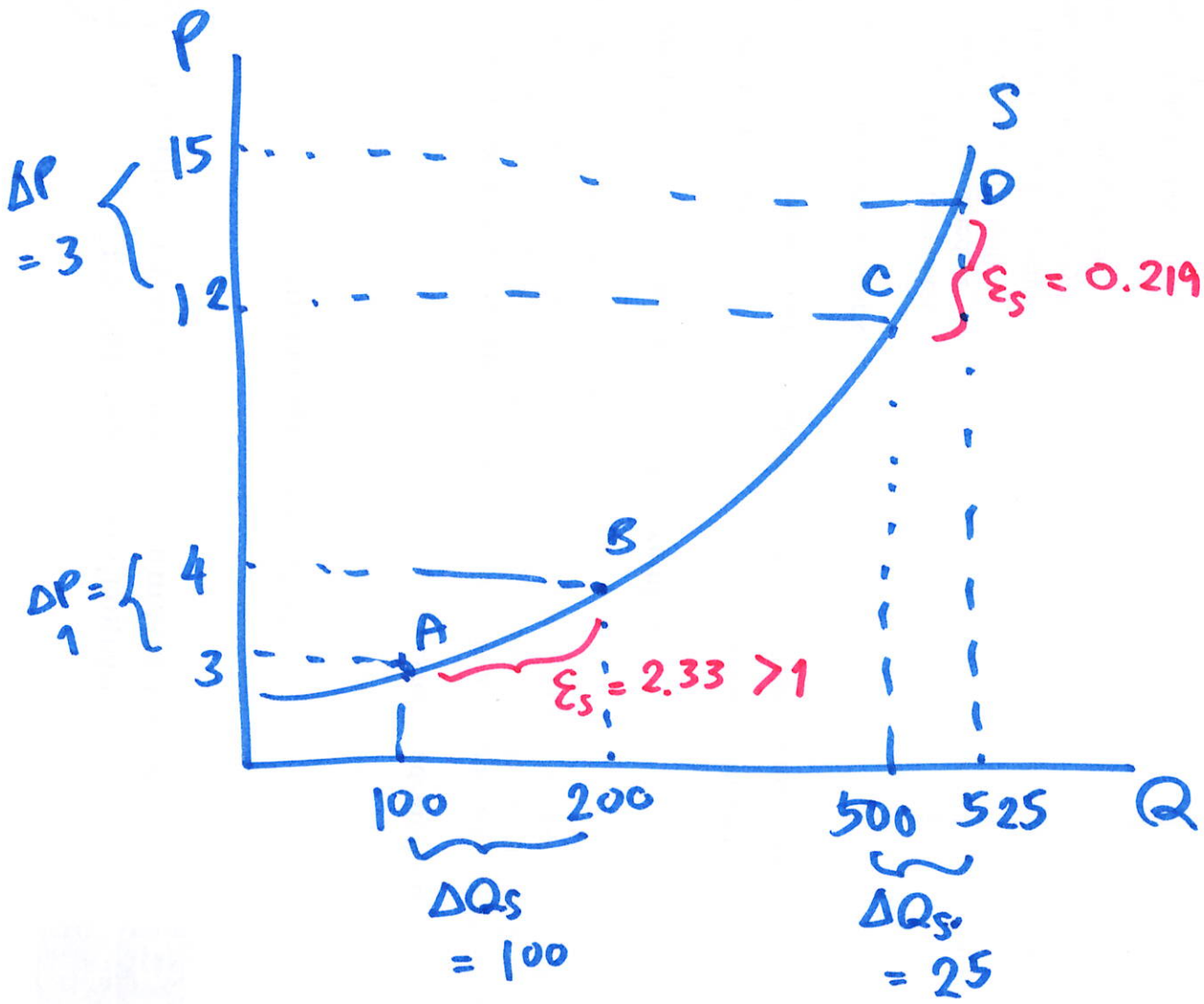
2 Non-linear supply curve:



$$\varepsilon_s = \frac{\% \Delta Q_s}{\% \Delta P} = \frac{\Delta Q_s / Q_s}{\Delta P / P} = \frac{\Delta Q_s}{\Delta P} \cdot \frac{P}{Q_s}$$

$$\therefore \varepsilon_s^A = \frac{1}{\text{slope of supply}} \cdot \frac{P_0}{Q_0}$$

Ex



Use mid-point method

A → B :

$$\varepsilon_s = \frac{\% \Delta Q_s}{\% P}$$

$$= \frac{(100)/150}{1/3.5}$$

$$\varepsilon_s = 2.33$$

C → D

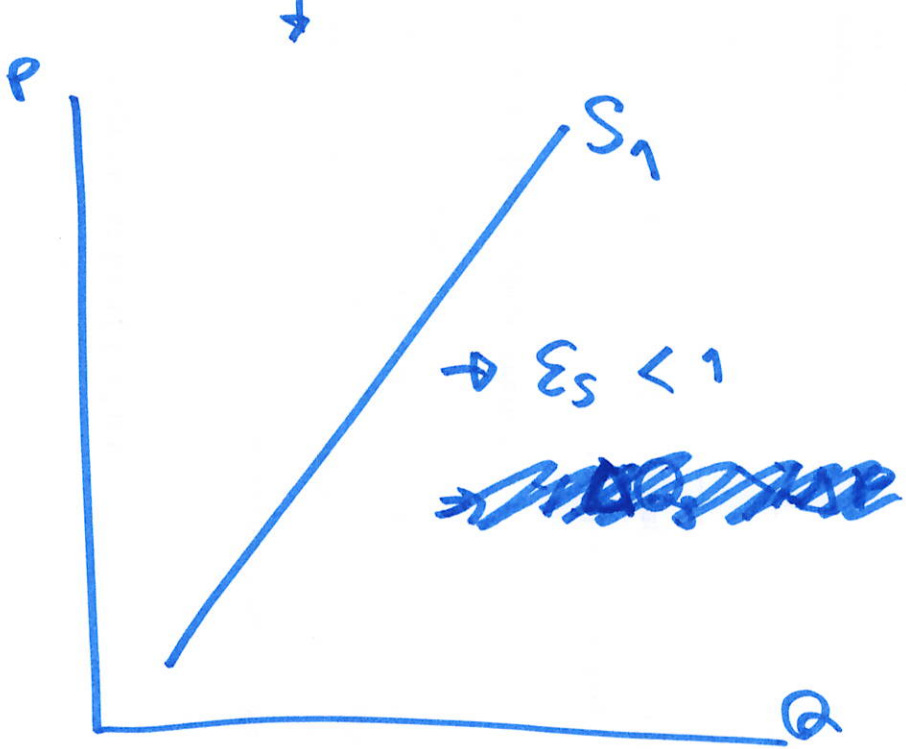
$$\varepsilon_s = \frac{25/512.5}{3/13.5}$$

$$\varepsilon_s = 0.219$$

Ex Rubber Gloves vs. Tires

↳ rubber
↳ natural

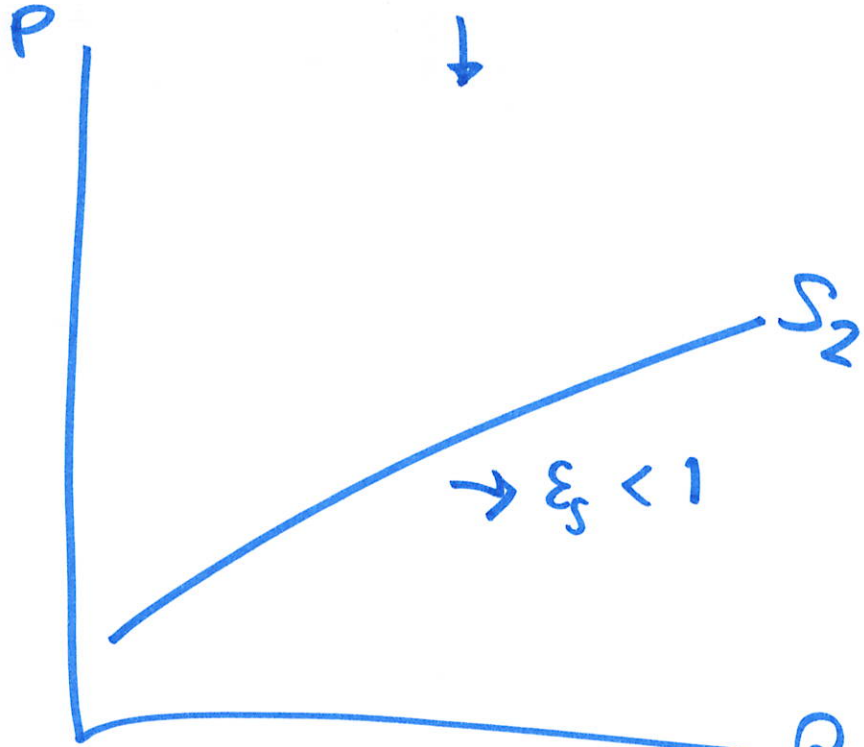
↳ natural rubber
↳ synthetic rubber
(oil or petroleum).



→ $\varepsilon_S < 1$

~~→ $\varepsilon_S < 1$~~

⇒ $\%.\Delta Q_S < \%.\Delta P$



→ $\varepsilon_S < 1$

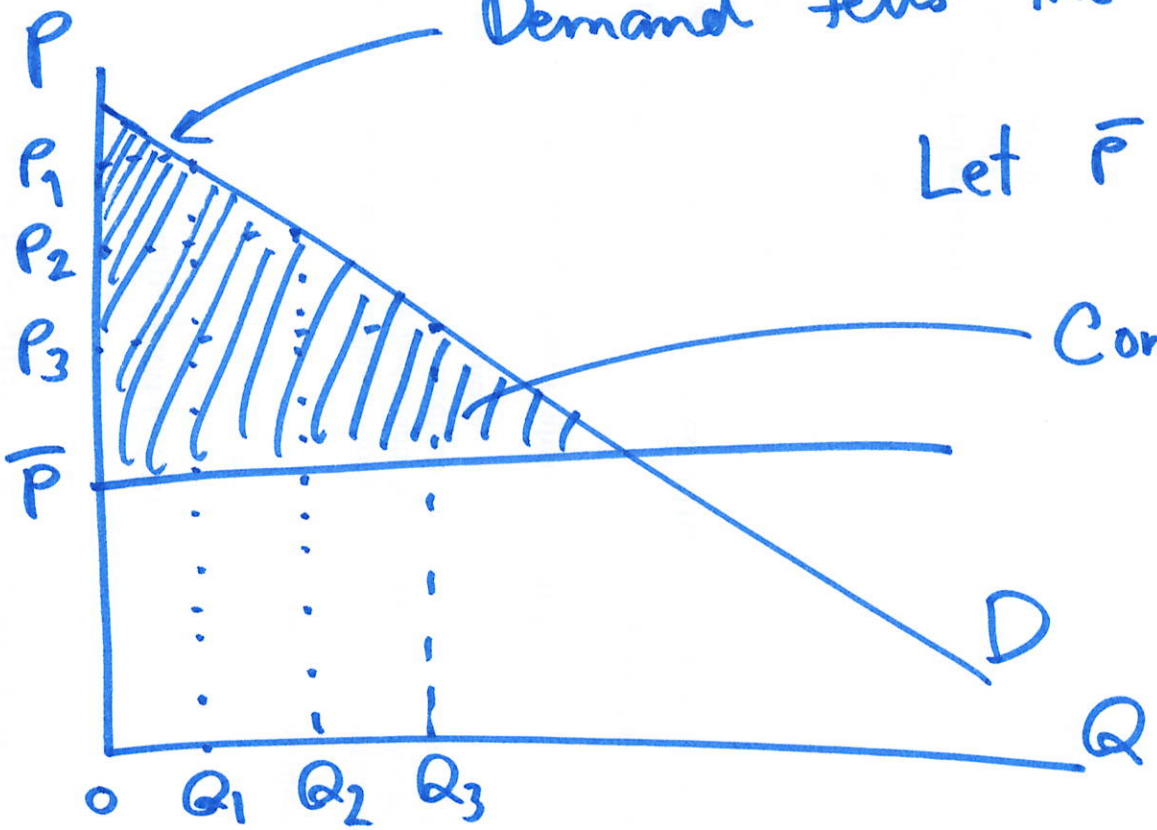
⇒ $\%.\Delta Q_S > \%.\Delta P$

Topic 4 : Consumer Surplus, Producer Surplus, & Market Efficiency.

- Recall 3 questions : what, how, for whom
  - "For whom" → allocation of resources
  - Want to illustrate how to measure "welfare"
    ⇓
    "well-being"
    of consumers & producers.

→ Consumer surplus & Producer surplus.

Consumer Surplus



Demand tells the willingness to pay.

Let $\bar{P}$ = actual price.

Consumer surplus (CS)

$CS = WTP - \bar{P}$