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2006-2012 Instructor, Department of Economics, CUHK – Hong Kong.

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2003-2007 Ph.D. (Business) Indiana University – Bloomington.
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Research paper:
Chung, Barick, "Two Level Price Discrimination and Vertical Relationship" (March 05, 2012). Available at SSRN: <http://ssrn.com/abstract=1997070>.

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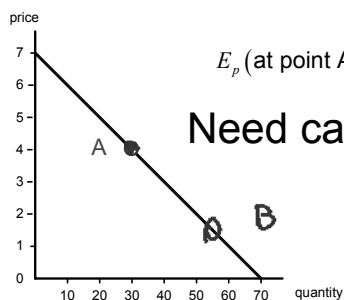
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ECO 2011 (Sections L07-10) Basic Microeconomics

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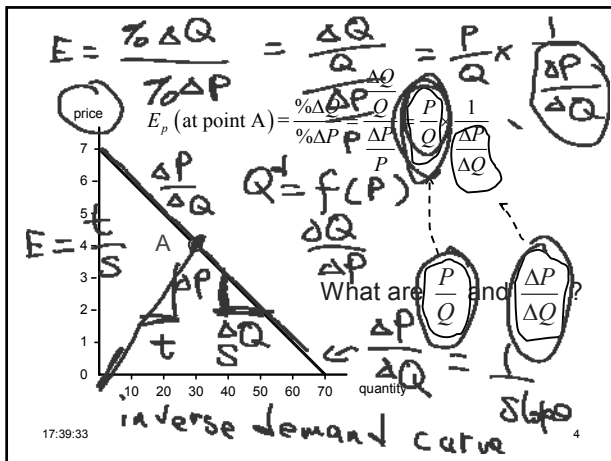


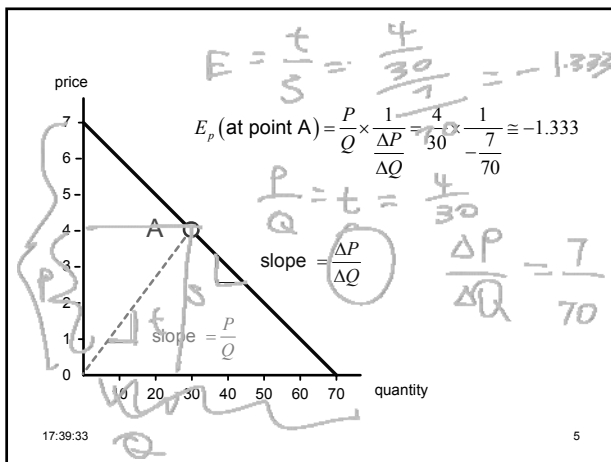
E_p (at point A) $\cong -1.333$

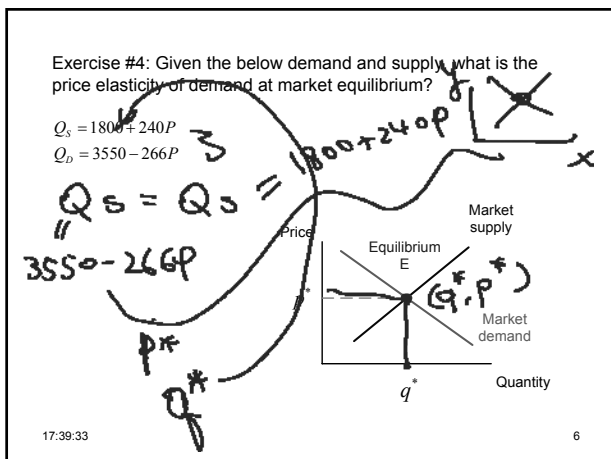
Need calculus ??

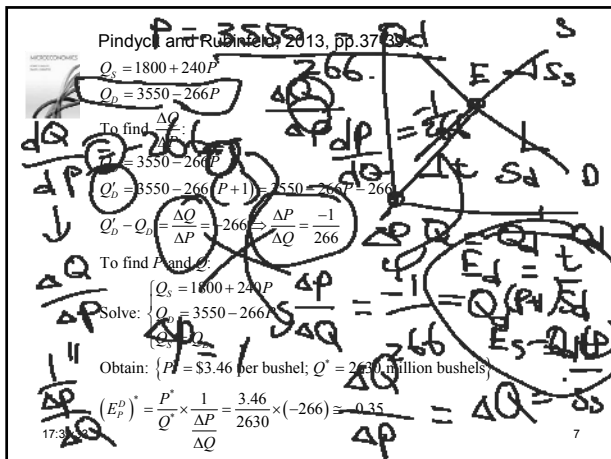
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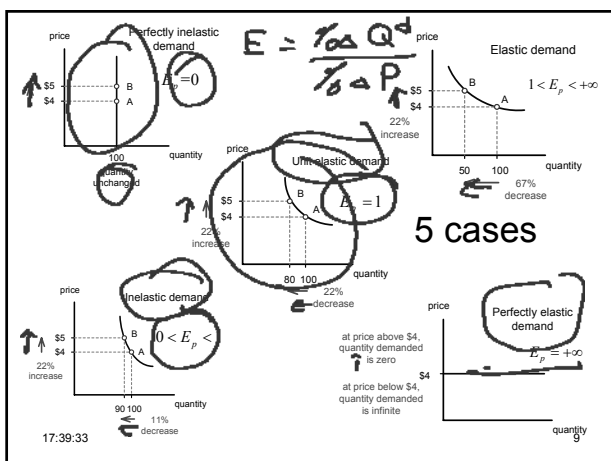
 Demand is said to be **inelastic** when the elasticity is less than +1

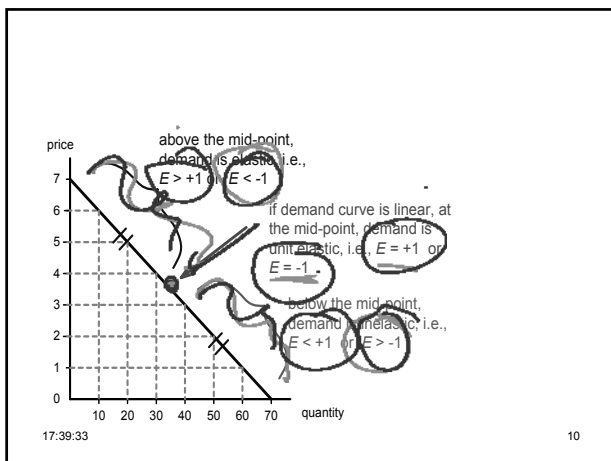
Demand is said to be **unit elastic** when the elasticity is +1


Demand is said to be **elastic** when the elasticity is greater than +1

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 Pindyck and Rubinfeld, 2013, p. 35:


Income elasticity is the percentage change in the quantity demanded resulting from a 1-percent increase in income.

$$E_I = \frac{\% \Delta Q}{\% \Delta I} = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta I}{I}} = \frac{I}{Q} \times \frac{1}{\frac{\Delta I}{\Delta Q}}$$

$\{ I, Q \}$
1% ↑ ??% \rightarrow

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 Pindyck and Rubinfeld, 2013, p. 35:

Cross-price elasticity is the percentage change in the quantity demanded of one good resulting from a 1-percent increase in the price of another.

$$E_{AB} = \frac{\% \Delta Q_A}{\% \Delta P_B} = \frac{\frac{\Delta Q_A}{Q_A}}{\frac{\Delta P_B}{P_B}} = \frac{P_B}{Q_A} \times \frac{1}{\frac{\Delta P_B}{\Delta Q_A}}$$

$\{ P^B, Q^A \}$
1% ↑ ??% \rightarrow

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Pindyck and Rubinfeld, 2013, p. 36:

Price elasticity of supply is the percentage change in the quantity supplied resulting from a 1-percent increase in price.

$$E_p^S = \frac{\% \Delta Q^S}{\% \Delta P} = \frac{\frac{\Delta Q^S}{Q^S}}{\frac{\Delta P}{P}} = \frac{P}{Q^S} \times \frac{1}{\frac{\Delta P}{\Delta Q^S}}$$

$\{P, Q^S\}$
1% 33%
↑

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Suppose the demand function for good X is:

$$Q_x^d = F(P_x, P_y, P_z, \text{Income, Taste, ...})$$

$Q_A^d = f(\underbrace{P_A}_{\text{Price of good x}}, \underbrace{P_B, I}_{\text{Income}}, T, \dots)$

Quantity demanded of good x Price of other goods

Demand function

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Suppose the demand function for good X is:

$$Q_x^d = F(P_x, P_y, P_z, \text{Income, Taste, ...})$$

Income elasticity of demand measures the responsiveness of quantity demanded (Q_x^d) to changes in its income (I)

$$E_I = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}} = \frac{\frac{\Delta Q^d}{Q^d}}{\frac{\Delta I}{I}} = \frac{\Delta Q^d}{\Delta I} \times \frac{I}{Q^d}$$

$E_I > 0$ iff $\frac{\Delta Q^d}{\Delta I} > 0$

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Income Elasticity of Demand

A good is a **Normal Good** if (and only if): **income elasticity** is positive,

A good is an **Inferior Good** if (and only if): **income elasticity** is negative

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The demand function is:

$$Q_x^d = F (P_x, P_y, P_z, \text{Income, Taste, ... })$$

Cross-price elasticity of demand measures the responsiveness of quantity demanded (Q_x^d) to changes in the **price of other goods** (P_y or P_z).

$$E_{AB} = \frac{\% \text{ change in quantity demanded for good A}}{\% \text{ change in price of good B}}$$

$$E_{AB} = \frac{\frac{\Delta Q_A}{Q_A}}{\frac{\Delta P_B}{P_B}} = \frac{P_B}{Q_A} \cdot \frac{\Delta Q_A}{\Delta P_B}$$

if $E_{AB} > 0$ then goods are substitutes
if $E_{AB} < 0$ then goods are complements

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Cross-price elasticity of demand

A pair of goods are **Substitutes** if (and only if): the **cross-price elasticity** of demand is positive

A pair of goods are **Complements** if (and only if): the **cross-price elasticity** of demand is negative

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Example #1:

A company finds that quantity demands is a function of:

$$Q_x^d = f(P_x, P_y, I, A)$$

where I is the income of people, P_y is the price of a related good, and A is the advertising level of the good.

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Example #1:

$$\ln Q_x^d = 10 - 1.2 \times \ln P_x + 1.7 \times \ln P_y + 3 \times \ln I + 2 \times \ln A$$

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