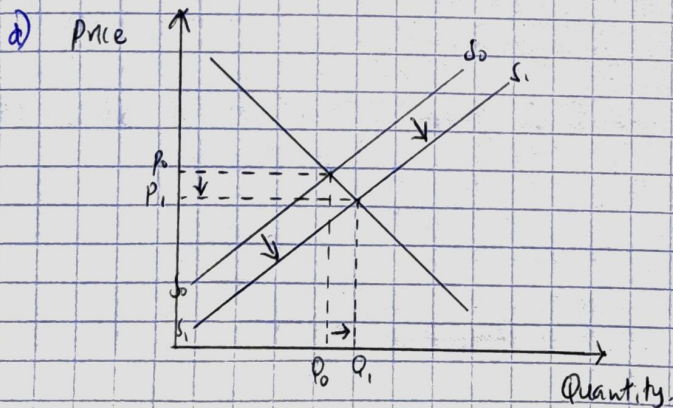
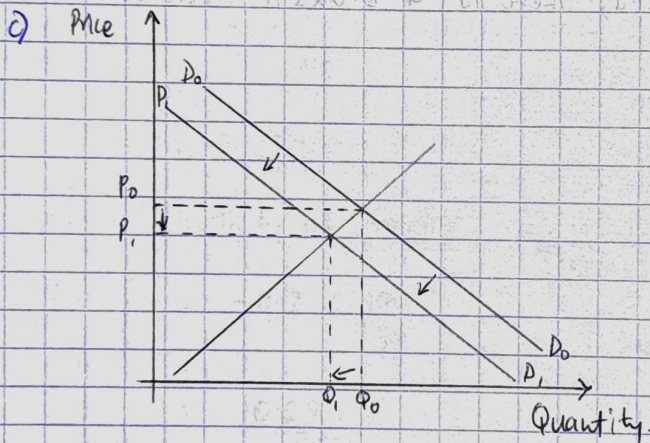
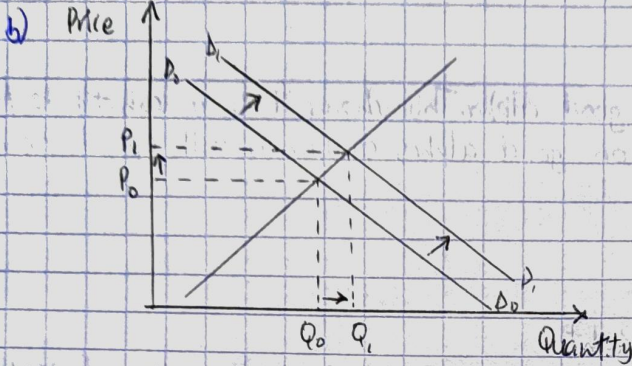
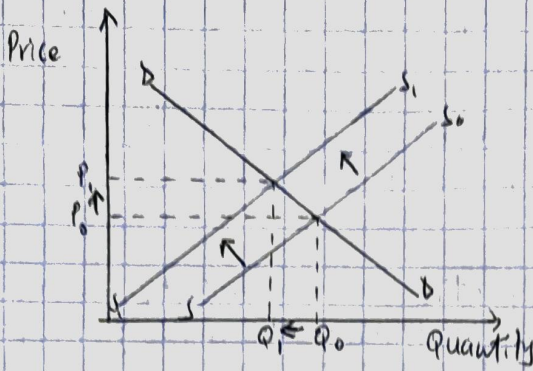


ADVANCED ECONOMICS AND BUSINESS ANALYSIS

① a)



⑩

$$Q_{\text{Alpha}} = 500 - 5 \cdot (\text{Price Alpha}) + 10 \cdot (\text{Price Beta}) - 20 \cdot (\text{Income})$$

- a) Alpha and Beta are substitutes as they have a positive cross elasticity.
- b) Alpha is an inferior good as it has a negative income elasticity. This shows that as consumer income rises, they buy less of the good.
- c) Beta is a normal good as it has a positive income elasticity. An increase in consumer income will result in more purchases of the units of the good.
- d) $E_{\text{Beta}} = +2.0$.

Beta has a positive cross elasticity to good alpha. This shows it is a substitute to good alpha. Any negative change on good alpha, consumers will opt to demand beta.

⑪

Yes the current ticket price is right.
Its price elasticity is less than one, showing an inelastic price elasticity.
For every 1% increase in ticket prices, there is a 0.025% decrease in demand.

#

(iv)

$$Q_x = 200 - 5P_x - 4P_y + 3P_z - 0.2(\text{Income})$$

① Estimated sales of Good X

$$Q_x = 200 - 5(50) - 4(10) + 3(60) - 0.2(100)$$

$$Q_x = 200 - 250 - 40 + 180 - 20$$

$$Q_x = \underline{\underline{70 \text{ units}}}$$

2) Price elasticity of Good X

$$\frac{\Delta Q_x \cdot P_x}{\Delta P_x \cdot Q_x} = -5 \times \frac{50}{70} = \underline{\underline{-3.5714}}$$

3) Cross price elasticity of Good X to Good Y.

$$\begin{aligned} \frac{\Delta Q_x \cdot P_y}{\Delta P_y \cdot Q_x} &= -4 \times \frac{10}{70} \\ &= \underline{\underline{-0.5714}} \end{aligned}$$

4) Cross price elasticity of Good X to Good Z.

$$\begin{aligned} \frac{\Delta Q_x \cdot P_z}{\Delta P_z \cdot Q_x} &= 3 \times \frac{60}{70} \\ &= \underline{\underline{2.5714}} \end{aligned}$$

5) Income elasticity of Good X

$$\begin{aligned} \frac{\Delta Q_x \cdot Y}{\Delta Y \cdot Q_x} &= -0.2 \times \frac{100}{70} \\ &= \underline{\underline{-0.2857}} \end{aligned}$$

6) P_z

7) Good X is an inferior good as it has a negative income elasticity.

Q)

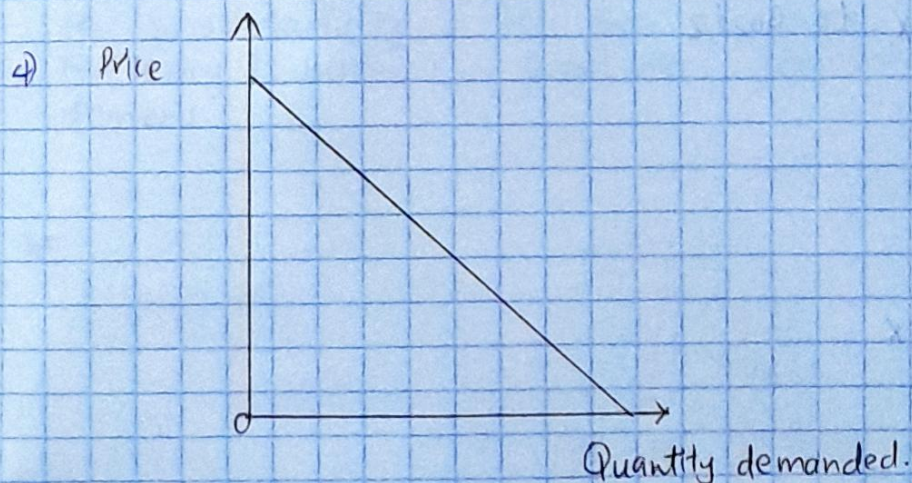
$$1) e(p) = \frac{\partial Q/Q}{\partial P/P}$$

An own price of -5.0 shows that a 1% increase in price of the good, results to a 5% decline in quantity demanded.

2) Point elasticity is the proportionate change in quantity demanded from a proportionate change in price at a particular point along the demand curve.

Arc elasticity on the other hand, is a measure of the average elasticity i.e. the elasticity at the mid point of a chord that connects two points along the demand curve.

3) Price per unit and the quantity of goods sold.



Price elasticity of less than 1, revenue will increase as price increases.
If greater than 1, revenue will decrease as price increases.

VI

a) Regression equation.

$$\begin{aligned} \text{Intercept } (\gamma) & 678.1576732 \\ \text{PW } (X_1) & -79.93051607 \\ \text{Income } (X_2) & -0.005364136 \\ \text{Adv. Budget } (X_3) & 22.42994945 \end{aligned}$$

$$\gamma = 678.1576732 - 79.93051607 X_1 - 0.005364136 X_2 + 22.42994945 X_3$$

b) $R^2 = 0.779529932$

c) 768

d) $\gamma = 678.1576732 - 79.93051607(1.76) - 0.005364136(49696) + 22.42994945(26.84)$

$$\gamma = 872.9237055$$

e) The error term.

e) Own price elasticity.

$$\frac{\Delta Q}{\Delta p} \cdot \frac{p}{Q} = -79.93051607 \times \frac{1.76}{872.9237055}$$

$$= -0.1612$$

Income elasticity.

$$\frac{\Delta Q}{\Delta Y} \cdot \frac{Y}{Q} = -0.005364136 \times \frac{49696}{872.9237055}$$

$$= -0.3054$$

Advertising elasticity

$$= 22.42994945 \times \frac{26.84}{872.9237055}$$

$$= 0.6897$$

f) We would expect sales to increase.
Sales is positively related to advertisement.

g) R^2 shows the percentage in which the dependent variable is explained by the independent variables.