A company hires an econometrician to estimate the demand function for its products (x).

The econometrician concludes that this demand function is

Qx=100Px^-3.1I^2.3Py^1.5A^0.1

Where Qx is the quantity demanded of product x per capita per month, Px is the product price ($) , I is per capita disposal income ($), Py is the price of a related product y, and A is the firm advertising expenditure ($).

i. What is the own price elasticity of demand?

ii. Will increases in price result in increases or decreases in the amount spent on the company product?

iii. What is the income elasticity of demand?

iv. What is the advertising elasticity of demand?

v. What is the cross-price elasticity of demand between good x and good y? What type of goods are x and y?

vi. If the population in the market increases by 10 percent, what is the effect on the quantity demanded if Px, I, Py and A are held constant ?

Answer:

i. With an increase in the price by 1% the quantity will decrease by 3.04%.

1,01^-3.1 = 0,9696

1 — 0,9696 = 0,0304

3.04%.

inelastic

ii. The price will increase as a result of an increase in the amount spent on the company's product.

iii. With an increase in income by 1% the number will increase by 23,15%.

1,01^2,3 = 1,2315

1 — 1,2315 = 0,2315

23,15%

elastic

iv. What is the advertising elasticity of demand?

With an increase in advertising by 1% the number will increase by 23,15%.

1,01^0,1 = 1,0010

1 — 1,0010 = 0,0010

inelastic

v. these goods are close substitutes, because a slight rise in price X (1%) causes a large increase in demand for Y (4.74%)

1,5*3,1 = 4,64

1,01^4,65 = 1,0474

1 — 1,0474 = 0,0474

4,74%

vi. If the population on the market increases by 10%, then the amount will increase by 24,51%.

1,1^2,3 = 1,2451

1 — 1,2315 = 0,2451

24,51%