Answer on Question #53518 – Economics / Microeconomics

Question:

Sailright Inc. manufactures and sells sailboards. Management believes that the price elasticity of demand is -3.0. Currently, boards are priced at 500 USD and the quantity demanded is 10,000 per year.

a) If the price is increased to 600 USD, how many sailboards will the company be able to sell each year.

b) How much will total revenue change as a result of the price increase?

Answer:

Ed = -3.0, P = 500 USD, Q = 10,000 per year.

a)

The arc elasticity is defined as:

$$E = \frac{Q_1 - Q_2}{P_1 - P_2} \frac{P_1 + P_2}{Q_1 + Q_2}$$

Then

$$E\ (P_1 - P_2)\ (Q_1 + Q_2) = (Q_1 - Q_2)\ (P_1 + P_2)$$

And

$$Q_2 = Q_1 \frac{P_1(1-E) + P_2(1+E)}{P_1(1+E) + P_2(1-E)} = 10 \cdot 10^3 \frac{500\ (1+3) + 600(1-3)}{500\ (1-3) + 600(1+3)} = 5{,}714$$

If the price is increased to 600 USD, the company be able to sell 5714 sailboards each year.

b) The total revenue will change by TR2 - TR1 = 600*5,714 - 500*10,000 = 3,428,400 - 5,000,000 = -1,571,600 as a result of the price increase.