

**Answer on Question#38628 - Economics - Economics of Enterprise**

Demand  $Q=20,000-300P$ ,  $P=\$30$ .

a. Compute the point price elasticity at demand at  $P=\$30$

Point Price Elasticity ( $E_d$ ) =  $(P/Q)(\Delta Q/\Delta P)$

$$Q = 20,000 - 300 \cdot 30 = 11,000$$

$\Delta Q/\Delta P$  is the derivative of the demand function, so  $\Delta Q/\Delta P = -300$

$E_d = (30/11,000) \cdot (-300) = -9,000/11,000 = -9/11$ , so the demand is  $<1$  (less than 1) and is inelastic.

b. If the objective is to increase total revenue should the price be increased or decreased? Explain

If the demand is inelastic, the decrease in price will increase the revenue, as the percentage increase in quantity demanded will be higher than the percentage increase in price.

c. Compute the arc price elasticity for a price decrease from \$30 to \$20

$$E_d = ((P_1 + P_2)/(Q_1 + Q_2)) \cdot ((Q_2 - Q_1)/(P_2 - P_1)), \quad Q_1 = 11,000, \quad Q_2 = 20,000 - 300 \cdot 20 = 14,000$$

$$E_d = (50/25,000) \cdot (9,000/-10) = -9/5 = -1.8, \text{ so the demand is elastic.}$$

d. Compute the arc price elasticity for a price decrease from \$20 to \$15

$$Q_1 = 14,000, \quad Q_2 = 15,500$$

$$E_d = (35/29,500) \cdot (1,500/(-5)) = -7 \cdot 3/59 = -21/59, \text{ so the demand is inelastic.}$$