The Olde Yogurt Factory has reduced the price of its popular Mmmm Sundae from $2.25 to $1.75. As a result, the firm's daily sales of these sundaes have increased from 1,500/day to 1,800/day. Compute the arc price elasticity of demand over this price and consumption quantity range.

Solution:
Arc elasticity is the elasticity of one variable with respect to another between two given points. The P arc elasticity of Q is calculated as

$$(\%\ \text{change in}\ Q)/(\%\ \text{change in}\ P)$$

or

$$E_p = \frac{\frac{Q_2 - Q_1}{(Q_1+Q_2)/2}}{\frac{P_2 - P_1}{(P_1+P_2)/2}}$$

Ep = ((1800-1500) / ((1800+1500) / 2)) / ((1,75-2,25) / ((1,75+2,25) / 2))= - 0,727

So the price elasticity of demand is -72,7 %. It is common to use the absolute value of price elasticity, since for a normal (decreasing) demand curve they are always negative. Thus the demand of these sundaes has 72,7 % elasticity, and is therefore inelastic.

Consumption quantity varies from 1500/day to 1800/day and its range is 300/day (1800-1500).