

Price Elasticity of Demand

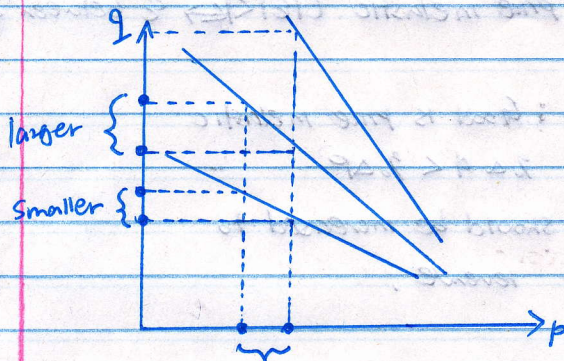
Basically this is the percentage change in quantity demanded divided by the percentage change in price.

$$q = q(p)$$

$$\frac{1+q}{11}$$

Formula: Demand Elasticity = $\epsilon = \frac{p}{q} \cdot \frac{dq}{dp}$

$$\frac{\frac{dq}{dp} / q}{\frac{dp}{p} / p} = \frac{\frac{dq}{dp} \cdot \frac{1}{q}}{\frac{1}{p}} = \frac{p}{q} \cdot \frac{dq}{dp}$$



Using Demand Elasticity

Used to analyse revenue change as price changes.

Step 1: Express $q = q(p)$ i.e. q as a function of p

Step 2: Revenue function $R(p) = p \cdot q(p)$

Step 3: Differentiate $R(p)$ with respect to p : $R'(p) = q(p) + p \cdot \frac{dq}{dp}$
 $= q(1 + \frac{p}{q} \cdot \frac{dq}{dp})$
 $= q(1 + \epsilon)$

Now $q(p) > 0$ hence the sign of $R'(p)$ determined by $(1 + \epsilon)$