CHAPTER 5

Price Elasticity of Demand

- Law of demand: P goes down, Q_d goes up but **how much is the change in Q_d ?**
- The amount changes from product to product and over different price ranges.
- **Price elasticity of demand (E_d) - Consumers' responsiveness to a price change**
- P goes up by a little and Q_d goes down by a lot = **Demand is elastic**
- P goes up by a lot and Q_d goes down by a little = **Demand is inelastic**
- $Ed = \frac{\%\text{ change in } Q_{dx}}{\%\text{ change of } P_x} = E_d = \frac{\text{change in } Q_{dx}}{\text{original } Q_{dx}} \div \frac{\text{change in } P_x}{\text{original } P_x}$
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P	Q
5	4
4	5

- Price change \$4-\$5 = $E_d = 1/4 \div 1/5 = 0.25 \div 0.20 = 1.25$ [elastic demand]
- Price change \$5-\$4 = $E_d = 1/5 \div 1/4 = 0.20 \div 0.25 = 0.80$ [inelastic demand]

Price Elasticity of Demand - Midpoint Formula

- $E_d = \frac{\text{change in } Q_d}{(\text{SUM } Q_d)/2} \div \frac{\text{change in P}}{(\text{SUM P})/2}$

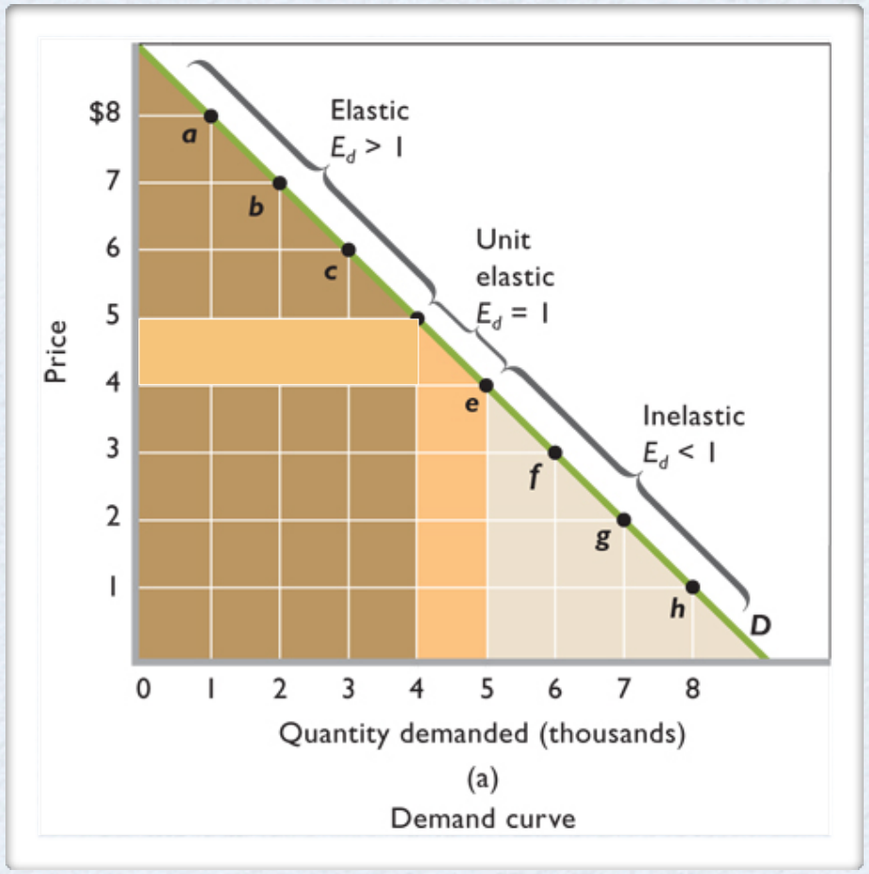
- $E_d = 1/(9/2) \div 1/(9/2) = 1$ [unitary elasticity] means: A 1% change (increase/decrease) in P will result in a 1% change in Q_d (decrease/increase).

- **Elastic demand: $E_d > 1$** = if the % change in P results in a **larger** % change in Q_d

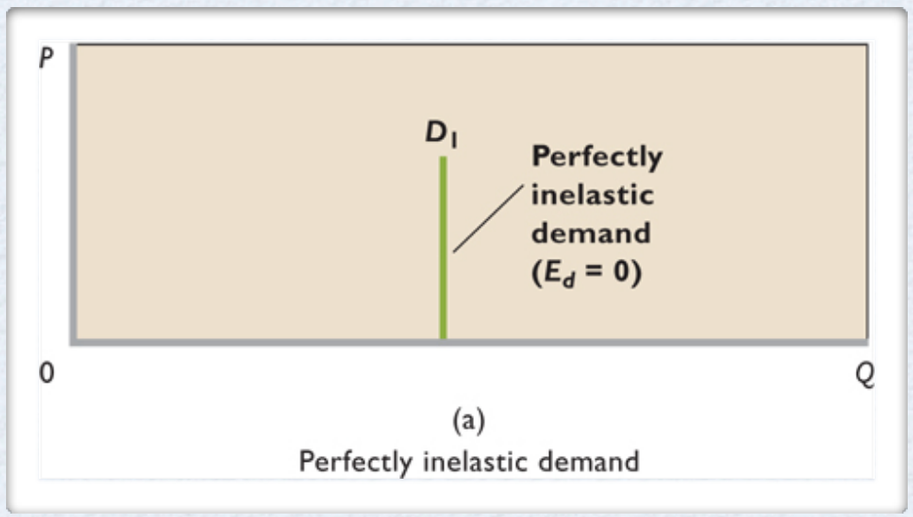
- **Inelastic demand**: **Ed < 1** = if the % change in P results in a **smaller** % change in Q_d

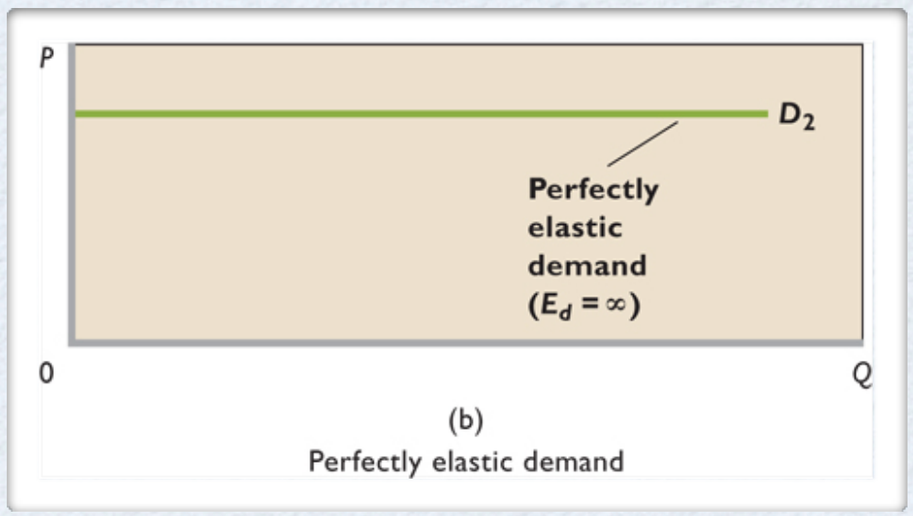
- **Unitary elasticity : $E_d = 1$** = if the % change in P equals to the % change in Q_d

Price Elasticity of Demand - Midpoint Formula



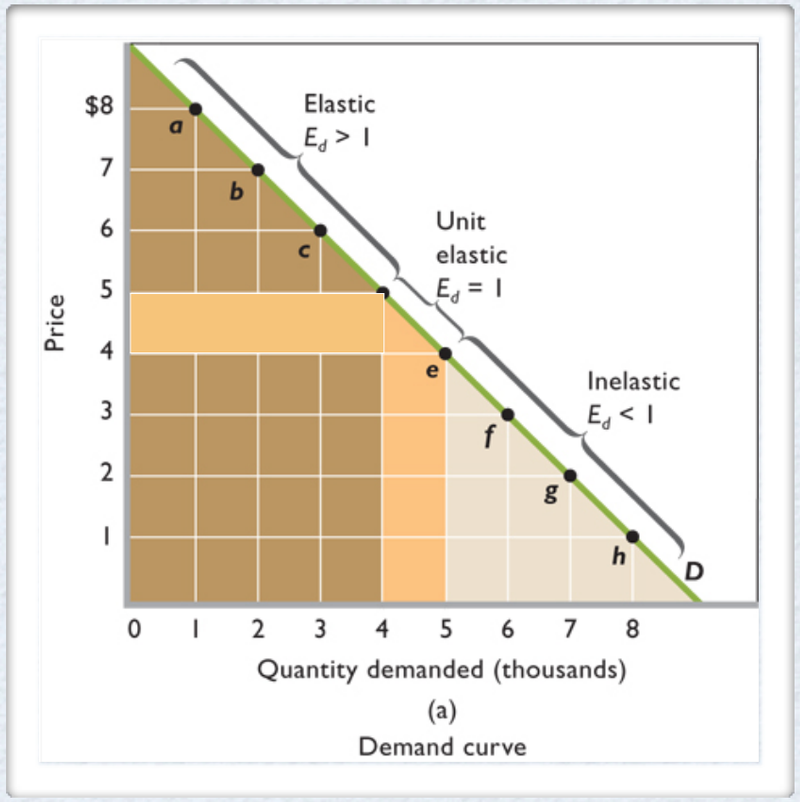
slope ≠ elasticity

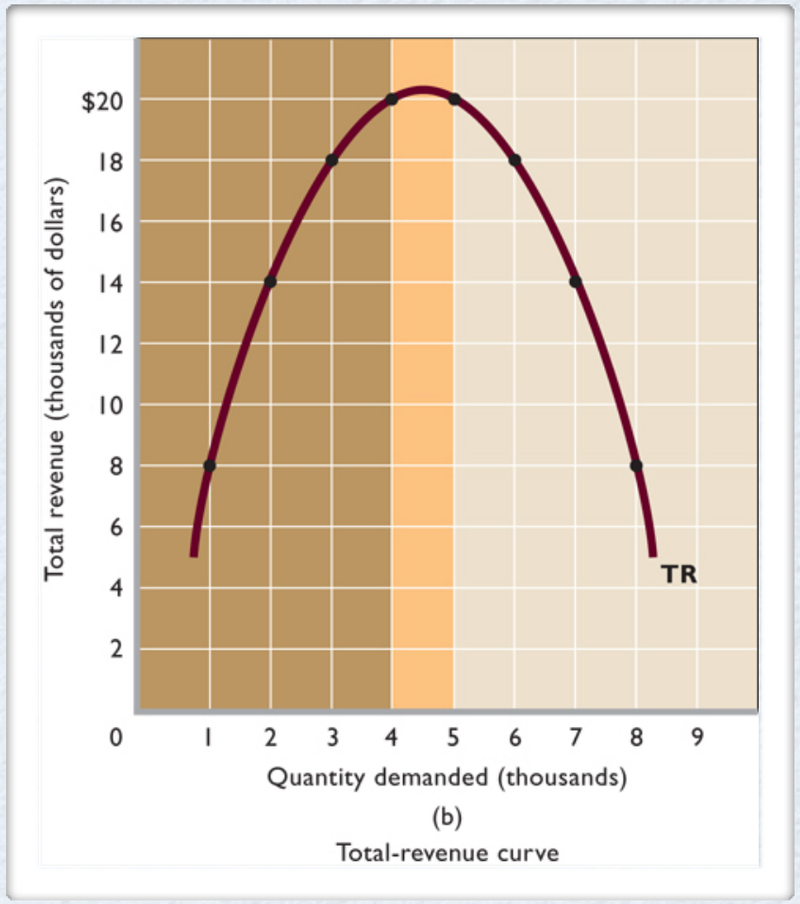




Total Revenue Test

- Change in P - ? change in TR
- **TR = P * Q**
- **Elastic demand**: P goes up, TR goes down; P goes down, TR goes up (price is lower but enough additional units will be sold to make up for the lower price);
- **Inelastic demand:** P goes down, TR goes down; P goes up TR goes up
- **Unitary elasticity:** Change in price, TR will stay constant





Determinants of Price Elasticity of Demand

- **Substitutability** - the larger the number of substitutes, the greater the price elasticity of demand
- **Proportion of income** - the higher the price of a good relative to consumers' income, the greater the price elasticity of demand
- **Luxuries vs necessities** - luxuries - more elastic, necessities - more inelastic
- **Time** - the longer the time period, the more elastic the demand