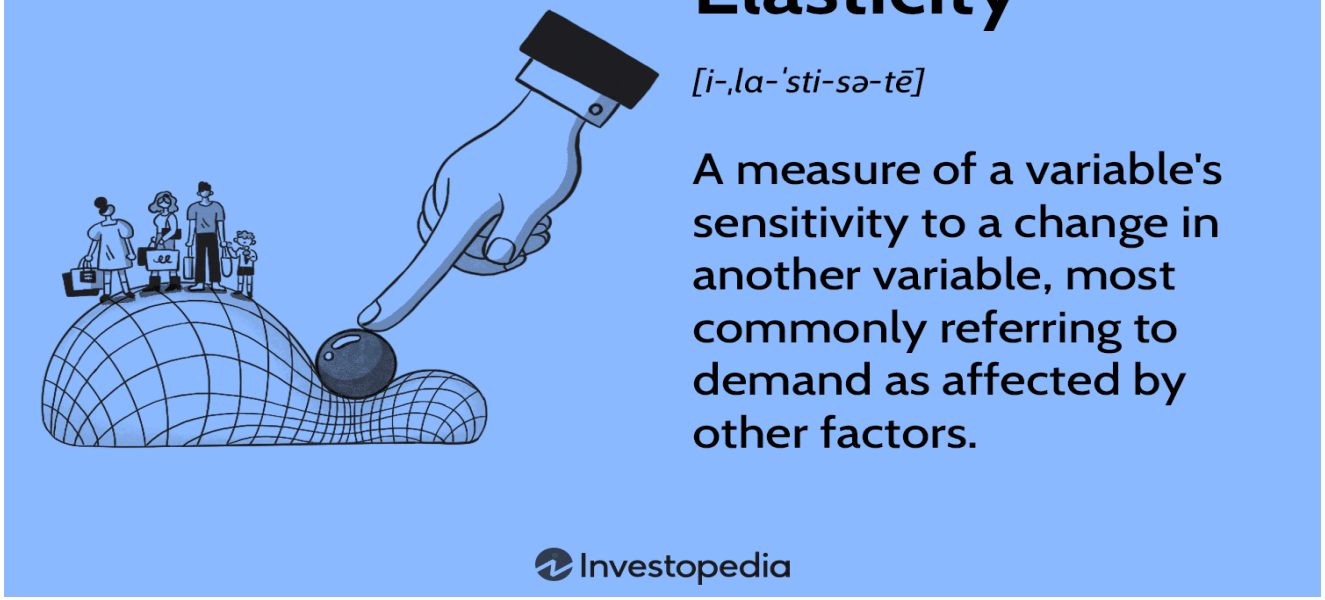
Elasticity



Part 2

Dr. Omnia Elmahdy

The Midpoint Method: A Better Way to Calculate Percentage Changes and Elasticities

The midpoint formula is **more accurate** when calculating the price elasticity of demand.

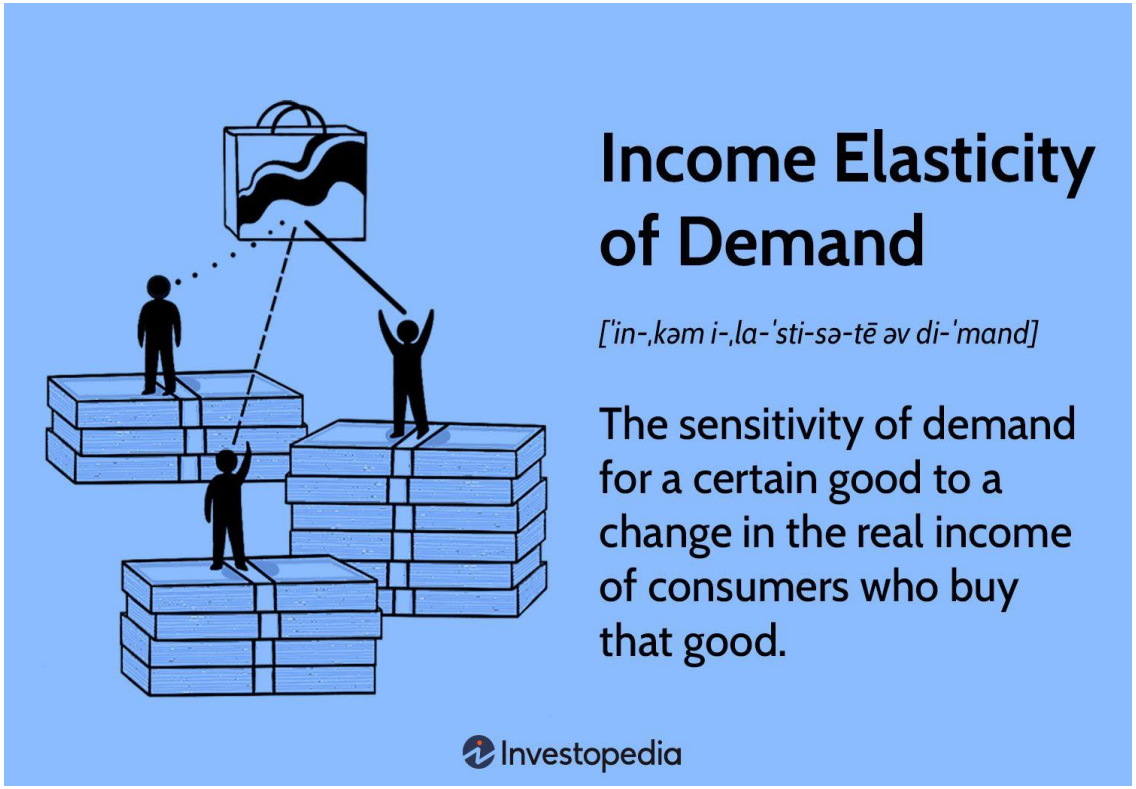
$$\text{Price elasticity of demand} = \frac{(Q_2 - Q_1)/[(Q_2 + Q_1)/2]}{(P_2 - P_1)/[(P_2 + P_1)/2]}$$

Example: If the **price** of an ice cream cone increases from **$2.00 to $2.20** and the **amount** you buy falls from **10 to 8 cones**, then your elasticity of demand, using the midpoint formula, would be calculated as:

$$\frac{\frac{(10-8)}{(10+8)/2}}{\frac{(2.20-2.00)}{(2.00+2.20)/2}} = \frac{22\%}{9.5\%} = 2.32$$

Income Elasticity of Demand

- **Income elasticity of demand** measures how much the quantity demanded of a good responds to a change in consumers' income.



- It is computed as the **percentage change in the quantity demanded divided by** the **percentage change in income.**

$$\text{Income elasticity of demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

Inferior Goods

Off Brand ice cream

Normal Goods

Branded ice cream

Travel by Train

Travel by aeroplane

Travel by a bicycle

Travel by car

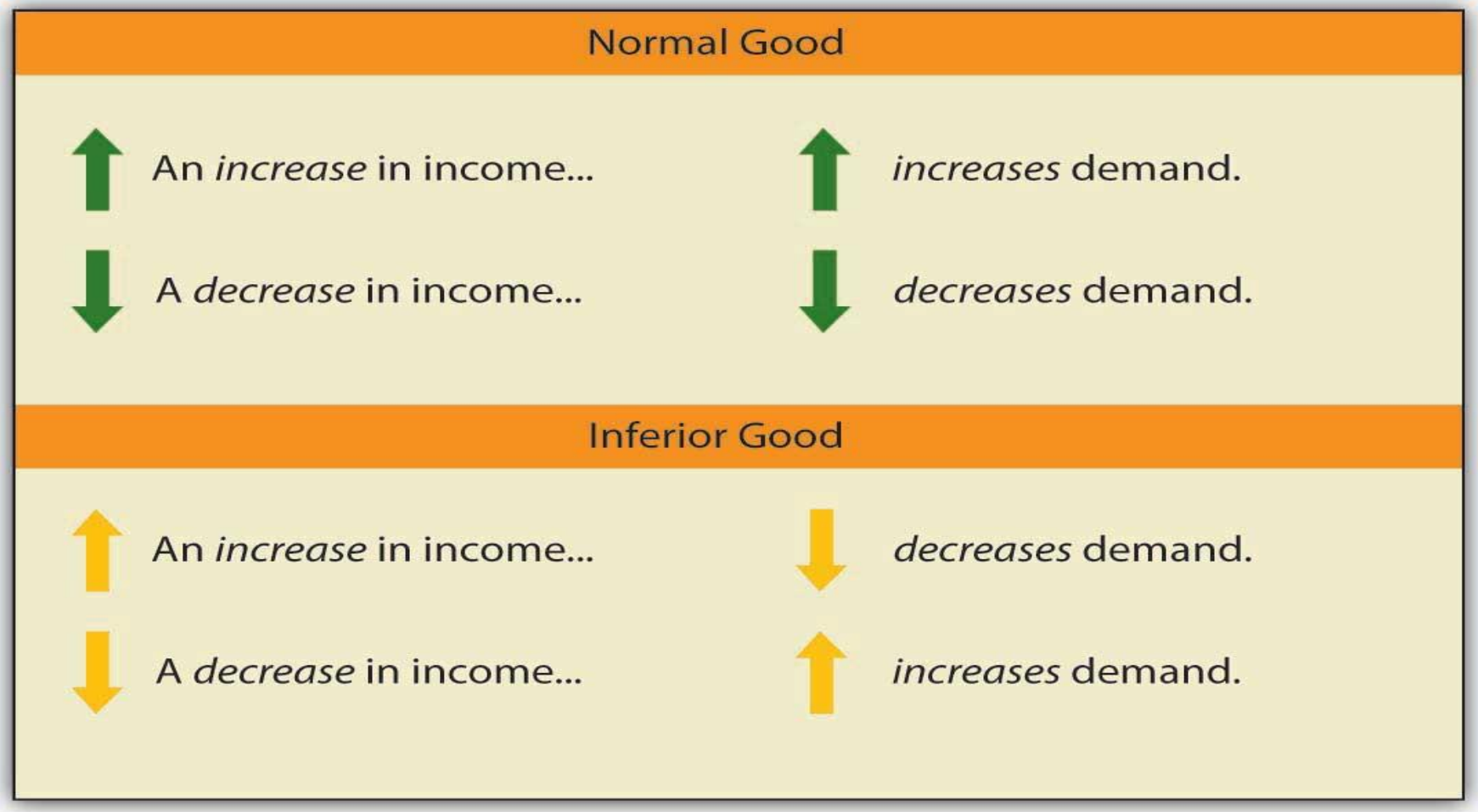
Wick stove

Gas stove

Types of Goods

- **Normal Goods:** roses, cars, home services, name-brand clothing, laptop, and technology equipment.
- **Inferior Goods:** generic products, used cars, discount clothing, and canned foods.

Higher income raises the quantity **demanded** for **normal goods** but **lowers** the quantity **demanded** for **inferior goods**.



Normal goods have positive income elasticities, while inferior goods have negative income elasticities

- **Goods consumers regard as necessities tend to be income inelastic**
  - Examples include **food, fuel, clothing**, and **medical services**.
- **Goods consumers regard as luxuries tend to be income elastic.**
  - Examples include sport cars, furs, and expensive foods.

- Asma's **income rises from 20,000 SR to 22,000 SR** and the **quantity of hamburger** she buys each week falls from **2 kg to 1 kg**.
- % change in quantity demanded = (1-2)/1.5 = -.6667 = **-66.67%**
- % change in income = (22,000-20,000)/21,000 = .0952 = **9.52%**
- income elasticity = 66.67% / 9.52% = **-7.00**

So, Hamburger is an inferior good for Asma

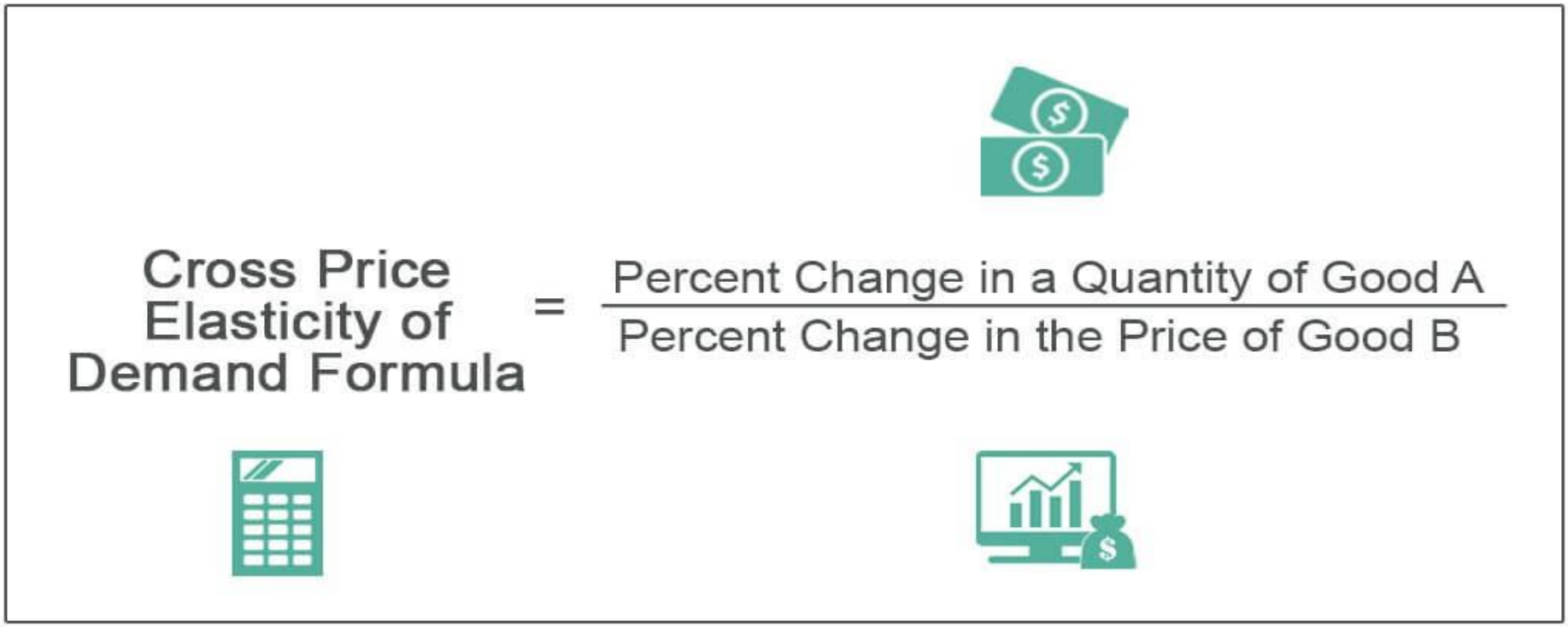
Cross-price elasticity of demand

A measure of how much the **quantity demanded of one good** responds to a **change in the price of another good,** computed as the **percentage change in the quantity demanded of the first good** divided by the **percentage change in the price of the second good**

Cross Elasticity of Demand

['krȯs i-ˌla-'sti-sə-tē əv di-'mand]

An economic concept that measures the responsiveness in the quantity demanded of one good when the price for another good changes.



Substitutes have **positive cross-price** elasticities, while **complements** have **negative cross-price** elasticities

- A company producing **torches** and **batteries** is analyzing the cross-price elasticity of the two goods. For example, the **demand for torches was 10,000 when the price of batteries was $10**, and the **demand rose to 15,000 when the price of batteries was reduced to $8**.

- Percentage change in the number of torches

$= [(15000 - 10000) / (15000 + 10000)] / 2 = 5000 / 12500 = 40\%$

- Percentage change in price of batteries

$= [(8 - 10) / (10 + 8)] / 2 = -2 / 9 = -22.22\%$

Thus, cross-price elasticity of demand = 40%/-22.22% = **-1.8**

Since the cross-price elasticity of demand for torches and batteries is **negative**, thus these two are **complementary** goods.

- The **price of apples** rises from **$1.00** per Kg to **$1.50** per Kg. As a result, the quantity of **oranges** demanded rises from **8,000** per week to **9,500**.
- **% change in quantity of oranges** demanded = (9,500-8,000)/8,750 = .1714 = **17.14%**
- **% change in price of apples** = (1.50-1.00)/1.25 = .40 = **40%**
- cross-price elasticity = 17.14% / 40% = **0.43**

Because the cross-price elasticity is **positive**, the two goods are **substitutes**

THE ELASTICITY OF SUPPLY

- **Price elasticity of supply** is a measure of how much the **quantity supplied** of a good responds to a **change in the price** of that good.
- Price elasticity of supply is the **percentage change in quantity supplied** resulting from a **percent change in price.**

PRICE ELASTICITY OF SUPPLY FORMULA

$$PES = \frac{\%\ \text{Change in quantity supplied}}{\%\ \text{Change in price}}$$

One of the important **determinants** of price elasticity of supply is the **nature of the product** itself. For example, goods that are essential for **basic needs**, such as food and clothing, tend to have a **relatively inelastic supply**, while **luxury goods**, such as jewelry and expensive cars, tend to have a **more elastic supply**.

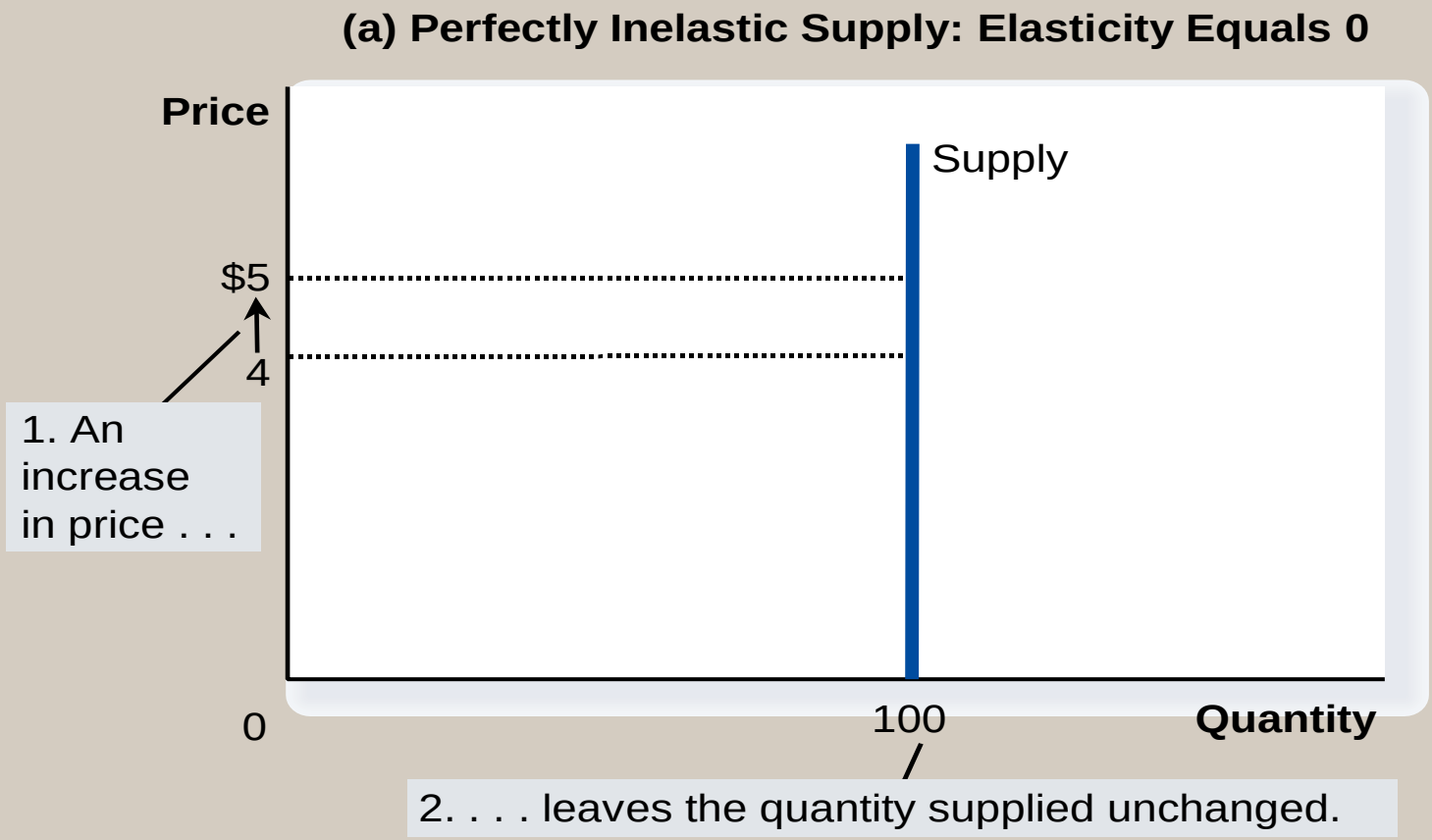
- The price of rice increased from 2.85 JD per kg to 3.15 JD per kg and the quantity supplied rises from 9,000 to 11,000 kg per month.

- % change in price = (**3.15 – 2.85**)/**3.00** × **100**% = **10%**

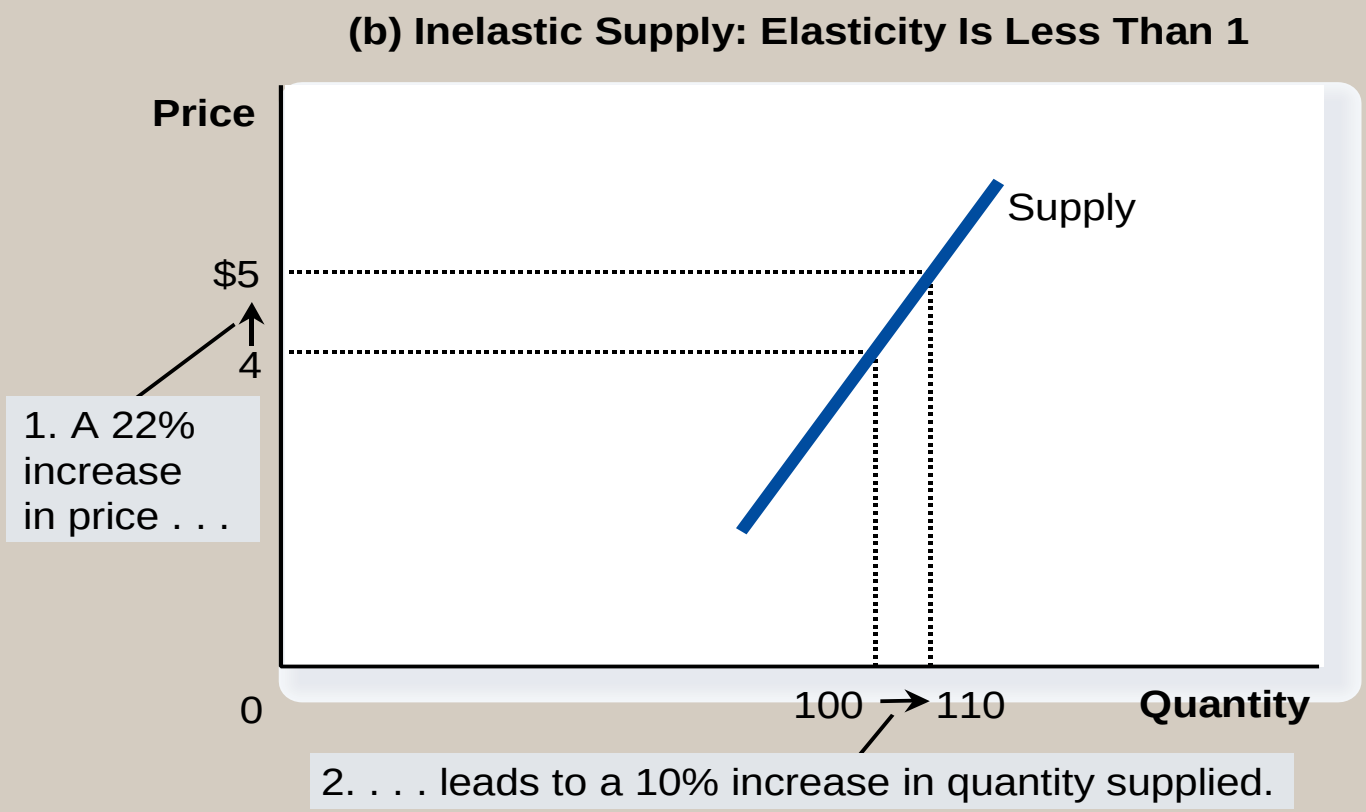
  % change in quantity supplied = (**11,000** - **9,000**)/**10,000** × **100**% = **20**%

Price elasticity of supply = (**20%**)/(**10%**) = **2**

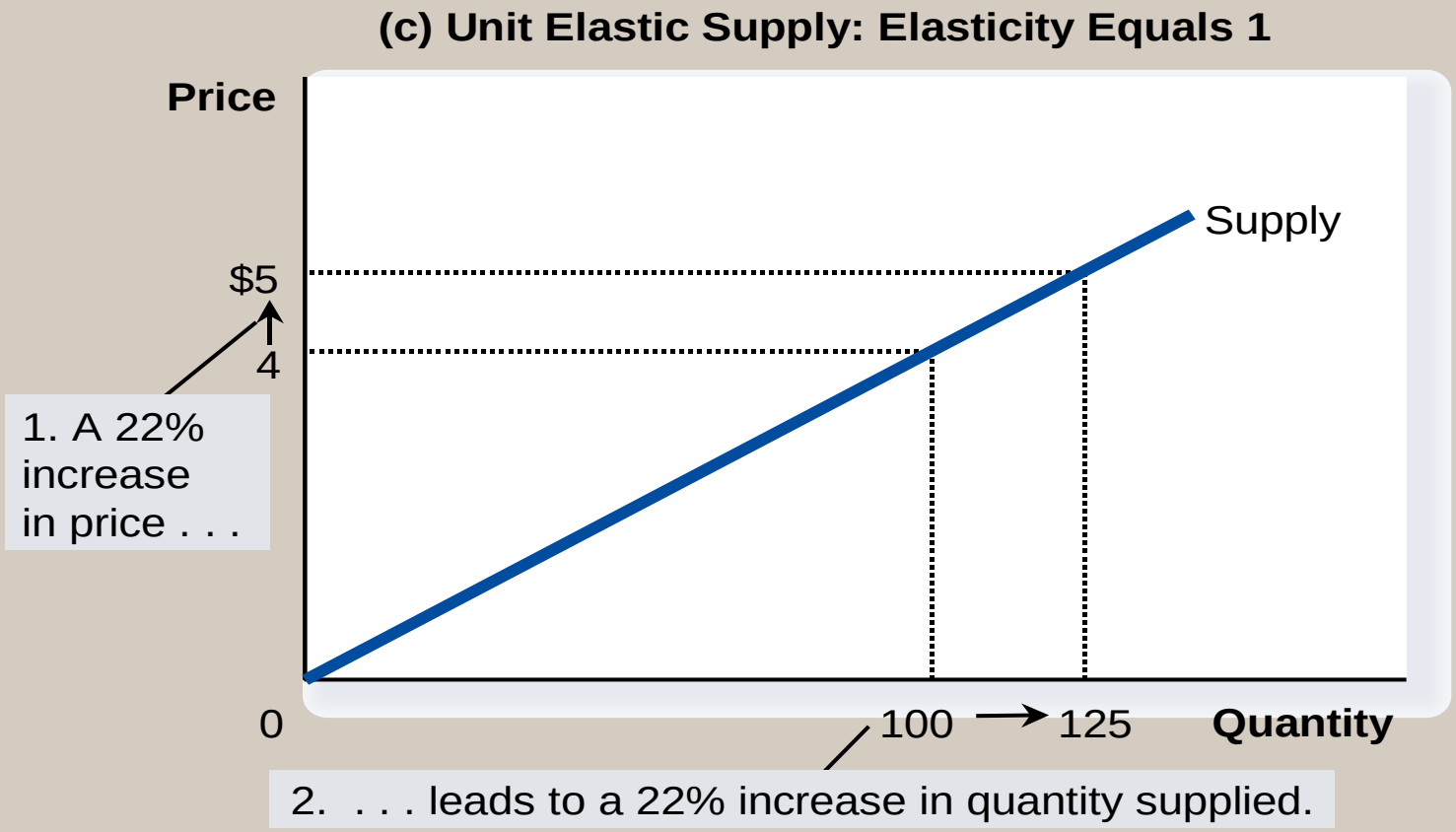
The Price Elasticity of Supply



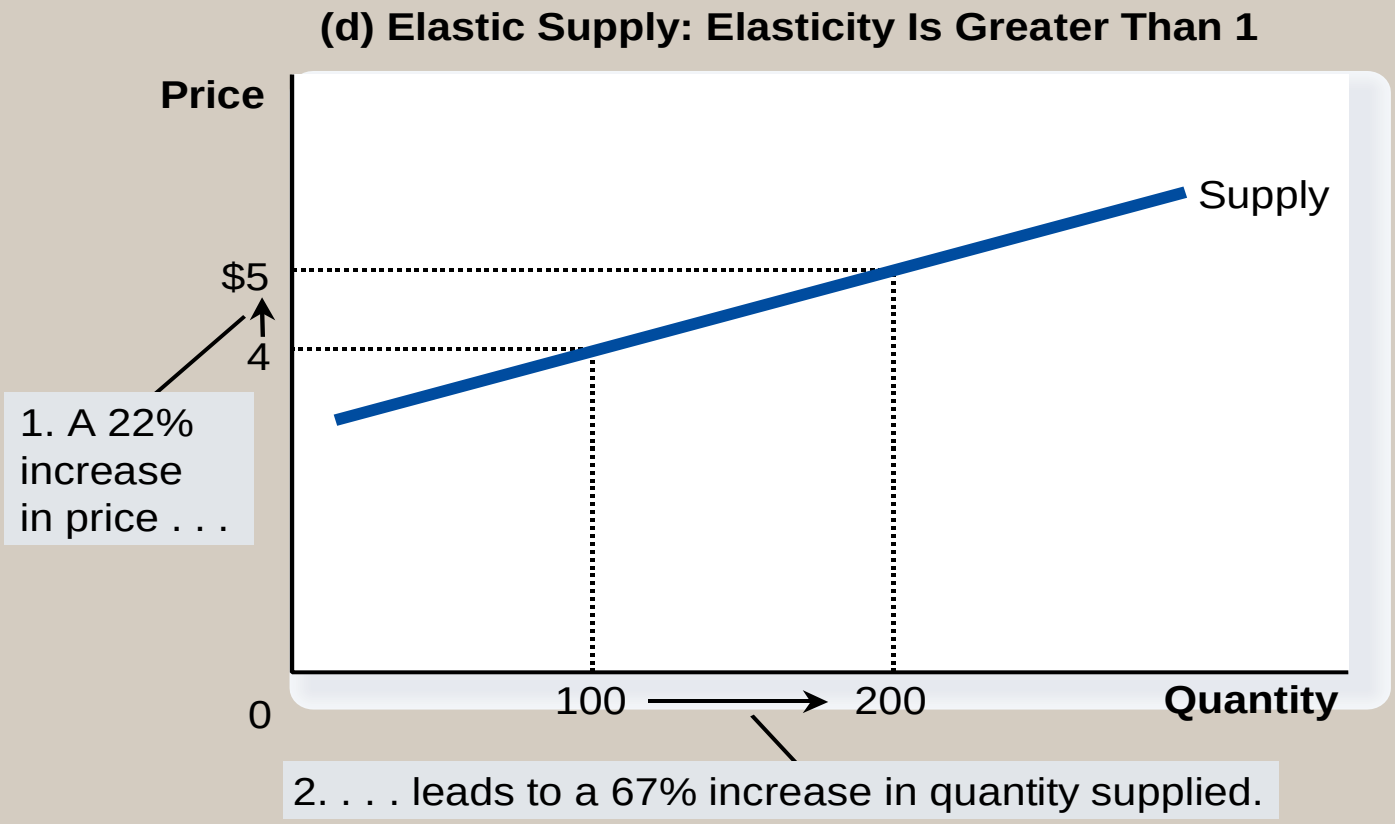
The Price Elasticity of Supply



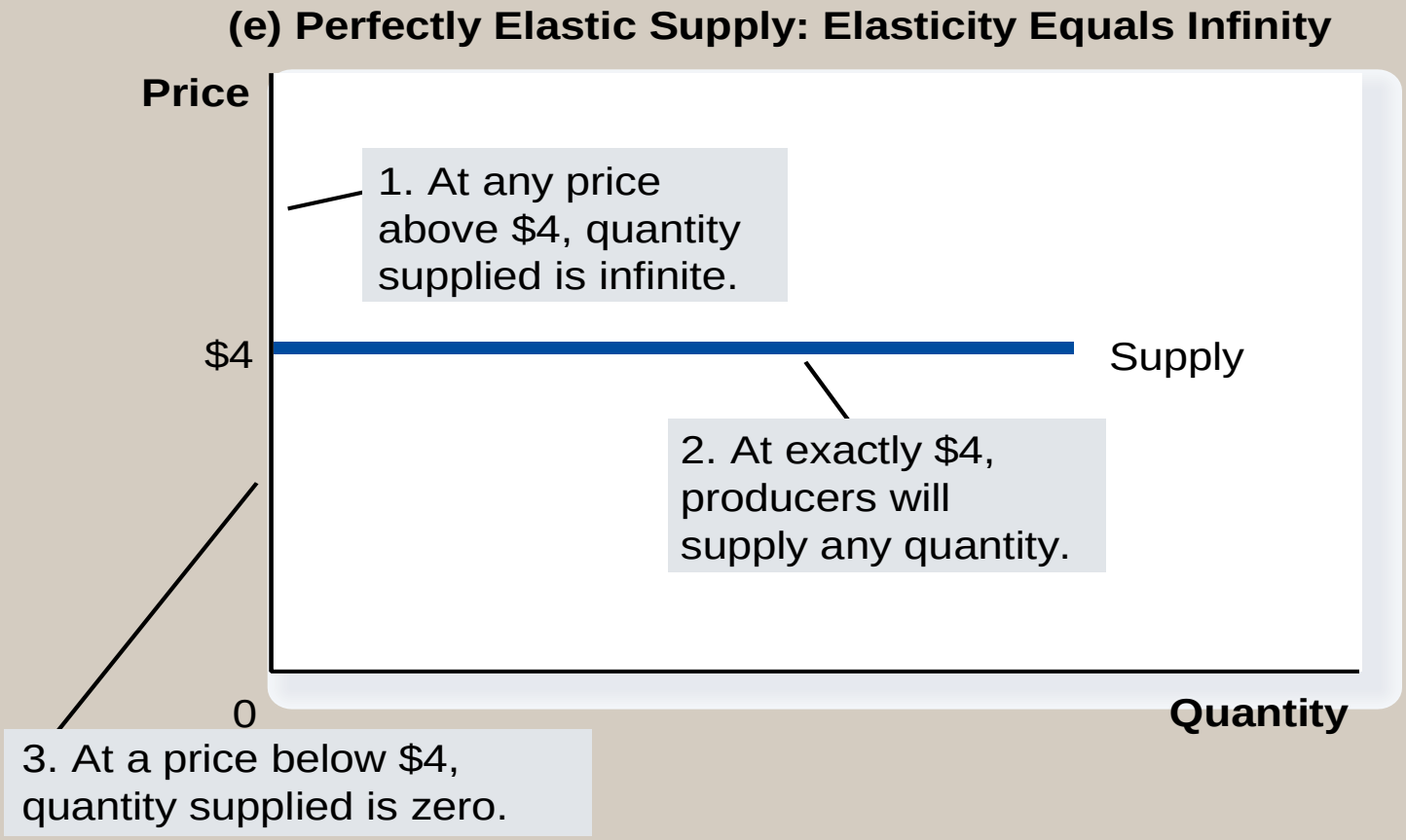
The Price Elasticity of Supply



The Price Elasticity of Supply



The Price Elasticity of Supply



Finance Management

TYPES OF ELASTICITY

- Elasticity is the degree of responsiveness in comparison to one variable to another variable

TYPES

INCOME ELASTICITY

- Change in demand due to change in real income
- Positive – normal goods
- Negative – inferior goods

PRICE ELASTICITY OF DEMAND

- Tells how a change in price impacts demand

CROSS ELASTICITY

- Change in demand due to change in price of other goods
- +ve means close substitute

PRICE ELASTICITY OF SUPPLY

- Tells about sensitivity of supply of product/service due to change in its market price