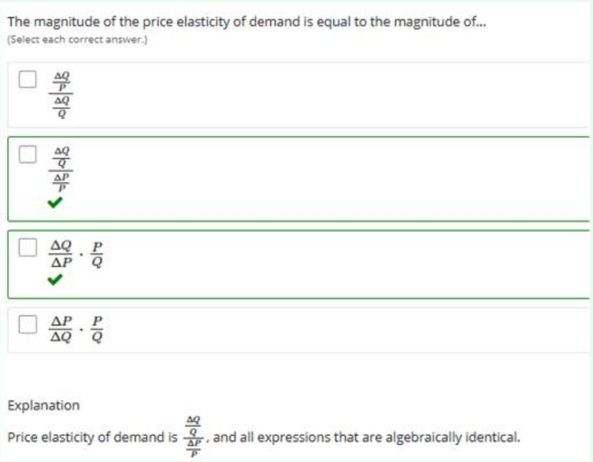
Elasticity Explained with Humor


The magnitude of the price elasticity of demand is equal to the magnitude of...
(Select each correct answer.)

- $\frac{\frac{\Delta Q}{P}}{\frac{\Delta Q}{Q}}$
- $\frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}}$ ✔
- $\frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$ ✔
- $\frac{\Delta P}{\Delta Q} \cdot \frac{P}{Q}$

Explanation

Price elasticity of demand is $\frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}}$, and all expressions that are algebraically identical.

You are a microeconomics expert.
I have a problem with the solution as shown in the picture.
However, I don't understand the solution.
Please help to re-explain with a beginner-friendly style and add some humor.
Please highlight the core concepts behind the problem.

Sure, let's break it down in a beginner-friendly way, with a touch of humor!

Core Concept: Price Elasticity of Demand
Price elasticity of demand measures how "sensitive" or "elastic" consumers are to changes in price. Imagine you're at a party, and someone says, "Hey, pizza just got 10% more expensive!" Elasticity tells you whether people will say:

1. "No problem, I'll still buy it." (Inelastic)
2. "Forget pizza, I'm switching to tacos!" (Elastic)

Now, mathematically, elasticity is defined as:

$$\text{Elasticity} = \frac{\%\text{Change in Quantity Demanded}}{\%\text{Change in Price}}$$

What's Happening in the Problem?
The question is testing whether you can recognize different forms of the elasticity formula, which is like spotting a friend wearing a hat—they look different, but they're the same person!

Here are the forms from the picture:

1. **First Option:**
$\frac{\Delta Q/P}{\Delta Q/Q}$
(This one is nonsense because it mixes up prices and quantities in a weird way. Imagine putting mustard on ice cream—it doesn't work!)

2. **Second Option:**
   $\frac{\Delta Q/Q}{\Delta P/P}$
   (Bingo! This is the textbook definition of elasticity. It directly tells you how much quantity changes compared to price changes, both in percentage terms.)
3. **Third Option:**
   $\frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$
   (This one is also correct, but it's elasticity in disguise! By multiplying the "raw" slope of the demand curve ($\frac{\Delta Q}{\Delta P}$) by the ratio of price to quantity ($\frac{P}{Q}$), you get the same elasticity formula. It's like putting on sunglasses—still the same person!)
4. **Fourth Option:**
   $\frac{\Delta P}{\Delta Q} \cdot \frac{P}{Q}$
   (Nope! This flips things around and doesn't make sense. It's like walking into a party and introducing yourself backward: "Hi, I'm backward John." Confusing, right?)

Why Does This Matter?
Elasticity helps businesses set prices. If demand is elastic, raising prices might scare off customers. But if it's inelastic, they can raise prices and still rake in cash (like concert tickets for your favorite artist—no one cares about the price, they just want in!).

Takeaway with Humor:
Elasticity is just a fancy way of saying, "How much do people freak out when prices change?"

- Big freakout? Elastic.
- Chill reaction? Inelastic.

The trick in this problem is recognizing that elasticity can "dress up" in different mathematical forms, but it's all the same concept. So, don't let it fool you—it's just pizza math at heart! 🍕


Perfectly inelastic demand is denoted by

- $\epsilon = -\infty$
- $\epsilon = -1$
- $\epsilon = 0$
- $\epsilon = 1$
- $\epsilon = \infty$
- None of the above

Explanation
Perfectly inelastic demand means that there is no change in quantity regardless of price, so $\frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} = \frac{0}{\frac{\Delta P}{P}} = 0.$

Now please explain the problem shown in this picture.

Let's simplify and explain what's going on in this problem in a fun, beginner-friendly way!

Core Concept: Perfectly Inelastic Demand

Perfectly inelastic demand means that no matter what happens to the price, the quantity demanded stays exactly the same. Think of it like this:

- Imagine you're on a desert island, and water is the only thing you need to survive. Whether someone sells it for $1 or $1,000, you'll still buy the exact same amount because you *have no choice*. That's perfectly inelastic demand in action.

The Math of Perfectly Inelastic Demand

The elasticity formula is:

$$\varepsilon = \frac{\%\text{Change in Quantity}}{\%\text{Change in Price}}$$

For perfectly inelastic demand:

- No matter how much the price changes ($\%\text{Change in Price}$), the quantity demanded doesn't budge ($\%\text{Change in Quantity} = 0$).

So, the numerator of the formula becomes 0, and the result is:

$$\varepsilon = 0$$

What Does the Problem Say?

The question asks you to pick the value of ε (elasticity) that represents perfectly inelastic demand. Let's analyze the options:

1. $\varepsilon = -\infty$
   Nope! This would mean demand is super sensitive to price changes (the opposite of inelastic).
2. $\varepsilon = -1$
   Nope again! This would mean unit elasticity, where the percentage change in quantity is exactly equal to the percentage change in price.
3. $\varepsilon = 0$
   Bingo! This is the correct answer because no matter what the price does, the quantity doesn't change at all.
4. $\varepsilon = 1$
   No! This represents unit elastic demand for positive relationships (not inelastic).
5. $\varepsilon = \infty$
   No way! This is for perfectly elastic demand, where any price change causes quantity demanded to drop to zero.

Takeaway with Humor:

Perfectly inelastic demand is like your morning coffee habit. Even if the café charges $5 more for your coffee, you'd still buy it because, well, caffeine is life. ☕ But, if they charge $100… okay, maybe you'd reconsider, but in theory, this is what inelastic demand feels like. 😊

So, the correct answer is $\varepsilon = 0$ because there's **zero change in quantity demanded**, no matter what price does.