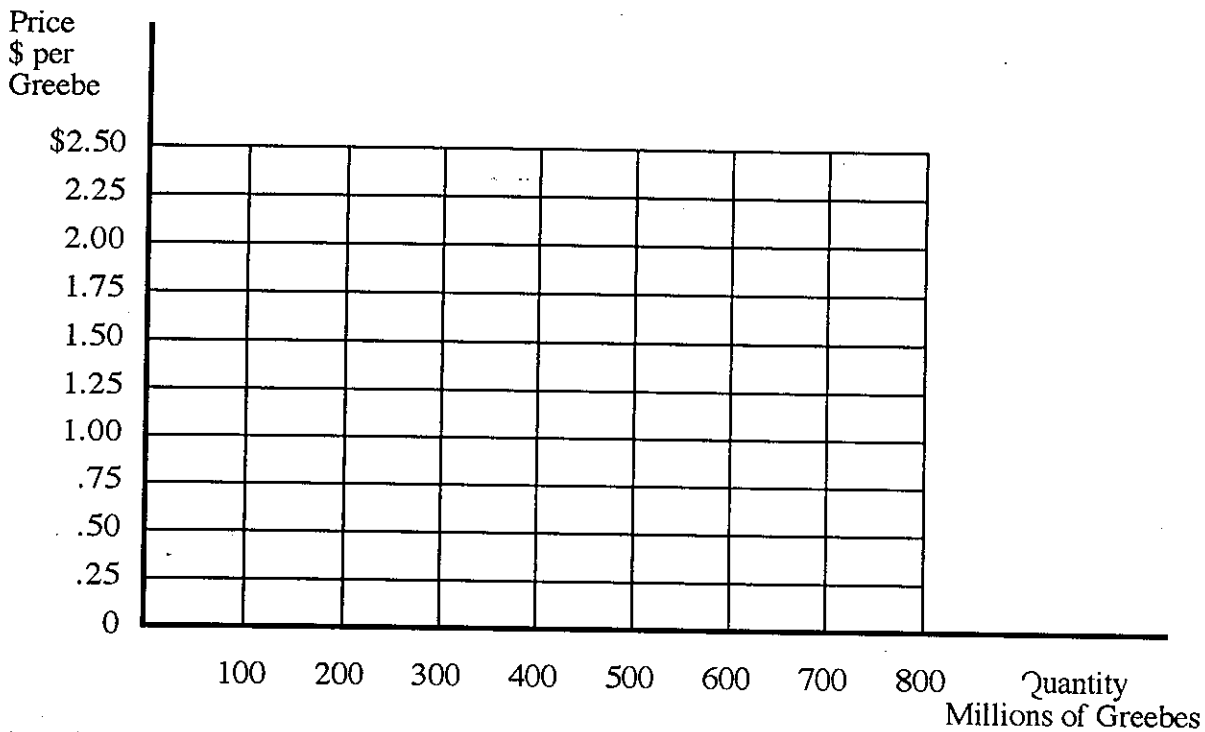


Homework Problem #9 Price Elasticity of Demand

PRINT YOUR NAME _____
(LAST) (FIRST)

Below is a table showing the market demand for greebes. Plot these data on the axes provided, and label the demand curve "D".

| P | Q |
|--------------------------|--|
| Price (\$ per Greebe) | Quantity Demanded (Millions of Greebes) |
| \$2.00 | 100 |
| 1.75 | 200 |
| 1.50 | 300 |
| 1.25 | 400 |
| 1.00 | 500 |
| .75 | 600 |
| .50 | 700 |



The Price Elasticity of Demand refers to moves along a given demand schedule, other things constant. If a price change causes the quantity demanded to change "a lot," we say that demand is "elastic." If a price change causes the quantity demanded to change "a little," we say that demand is "inelastic."

How do you know what is meant by "a lot" and "a little"? The simplest answer is to watch **total revenue** or **total expenditure** (they're the same thing, $P \cdot Q = \text{total revenue or total expenditure}$) and see which way it moves when price changes. If total revenue moves with quantity we say demand is "elastic," and if total revenue moves with price, we say demand is "inelastic."

Example 1: If price goes up, the quantity demanded will usually go down, and if total revenue goes down with the quantity demanded we say the quantity demanded changed "a lot" -- it pulled revenue down with it -- and demand is elastic over this interval. On the other hand, if price goes up, the quantity demanded goes down, and total revenue goes up with the price rather than down with the quantity, we say the quantity changed "a little" -- not enough to pull revenue with it -- and demand is inelastic over this interval.

Example 2: If price goes down, the quantity demanded will usually go up, and if total revenue goes up with the quantity demanded we say the quantity demanded changed "a lot" -- it pulled revenue up with it -- and demand is elastic over this interval. On the other hand, if price goes down, the quantity demanded goes up, and total revenue goes down with the price rather than up with the quantity, we say the quantity changed "a little" -- not enough to pull revenue with it -- and demand is inelastic over this interval.

Example 3: If price goes down, the quantity demanded will usually go up, and if total revenue is unchanged, then we say that demand over this range is unitary (or unit) elastic. Let's denote unitary elasticity by U. On the other hand, if price goes up, the quantity demanded goes down, and total revenue is still unchanged, demand is again unitary elastic over this interval.

IMPORTANT POINT: A single demand curve can have different degrees of elasticity over different intervals. To see this, **complete the table below**, and then go back to the curve you plotted on the axes on the preceding page and label the interval between \$1.75 and \$1.50 "E" for elastic, since over this interval revenue moves with quantity. Label the interval between \$.75 and \$.50 "I" for inelastic, since over this interval revenue moves with price. Label the interval between \$1.25 and \$1.00 "U" for unit elastic, since over this interval revenue is unchanged. Label the interval between \$1.50 and \$1.25 "(E or I)" because over this interval revenue moves with (quantity/price). Label the interval between \$1.00 and \$.75 "(E or I)" because over this interval revenue moves with (quantity/price).

| <u>P</u> Price (\$ per Greebe) | <u>Q</u> Quantity Demanded (Millions of Greebes) | Total Revenue (P · Q) | Determination of Elasticity Between Intervals |
|--------------------------------------|--|--------------------------|--|
| \$1.75 | 200 | \$350 million | Revenue moves with Q Demand is E . |
| 1.50 | 300 | \$450 million | Revenue moves with ____. Demand is ____. |
| 1.25 | 400 | \$500 million | Revenue is unchanged. Demand is U . |
| 1.00 | 500 | \$500 million | Revenue moves with ____. Demand is ____. |
| .75 | 600 | \$__ million | Revenue moves with P. Demand is I . |
| .50 | 700 | \$350 million | |

PRINT YOUR NAME _____

(LAST)

(FIRST)

THE INFORMATION IN THE PRECEDING EXAMPLES INDICATES THAT, AS ONE MOVES TO THE RIGHT ALONG A DOWNWARD SLOPING STRAIGHT LINE DEMAND CURVE:

- A. demand increases.
- B. the quantity demanded falls.
- C. the curve becomes more elastic.
- D. the curve becomes more inelastic.

Now, the dog work over, can you use the concept of price elasticity of demand to throw some light on the following four real world cases?

Case 1: The X Telephone Company asked the Public Service Commission for permission to increase rates by 20%. The phone company argued that declining revenue made this rate increase essential. Opponents of the rate increase contended that the phone company's revenues would fall because of the rate hike.

Which of the following best interprets the information given?

- A. The phone company felt that the demand for telephone service was elastic and the opponents of the rate increase felt it was inelastic.
- B. The phone company felt that the demand for telephone service was inelastic and the opponents of the rate increase felt it was elastic.
- C. Both groups felt that the demand was elastic, but for different reasons.
- D. Both groups felt that the demand was inelastic, but for different reasons.

Case 2: This case is based on the following numbered sentences:

- (1) Ten years ago, XYZ university built a new basketball facility which tripled the seating availability for basketball fans.
- (2) Since the new facility was built, the basketball team won two NCAA Championships and several Conference titles.
- (3) Tickets cost thirteen dollars.
- (4) A marketing survey shows that the University's gate receipts would be higher if it charged higher prices, even though the number of tickets sold would fall.

What, if anything, does sentence (4) imply about the price elasticity of demand?

- A. Demand is elastic.
- B. Demand is inelastic.
- C. Demand is at unit elasticity.
- D. It implies nothing about elasticity of demand.

Case 3: Read the newspaper clipping on the next page and answer these questions: What does this clipping say about the price elasticity of demand for Saturday bus service in New Albany, Indiana, during the month of August, 1972? Explain.

Bus fare cut lures riders, but not enough

By TENSLEY STEWART

Courier-Journal & Times Staff Writer

Last month Robert A. Kelso cut the Saturday fares on his line from 40 cents to 25 cents in an attempt to lure more passengers.

The experiment failed, and Kelso, a former city attorney, says he's going to have to let some drivers for his Home Transit Co. go and cut back on the hours the buses run.

"When? I don't know," he said earlier this week. "But it's imminent."

During the four August Saturdays the reduced fares were in effect, more people -- 2,356, an average of 589 per Saturday -- did ride the buses. But the

income totaled less than when fewer people rode at the higher fares.

On the most profitable Saturday in August, 667 persons paid, at 25 cents each, \$166.75.

On July 29, the last Saturday before the experiment started, 551 persons paid, at 40 cents each, \$220.40.

The difference -- \$53.65 -- represents about \$1,500 a month in income for the bus company.

If lowering the fares brings more riders but less money then, Kelso said, he's not going to lower fares.

What he will do is reduce the number of drivers he has from the current 15 (there were 25 just last year) and operate the buses only in the morning and late afternoon, the periods when they are most heavily used.

Kelso, who says the bus business has been going downhill for years, thinks it is nearing bottom. He said he dislikes the idea of laying off drivers and cutting back on service. But he can't continue to operate at a loss, either, he said.

Case 4: How elastic do you think your demand for the following products is, in the price range near the price prevailing now?

Required textbooks;
Basketball tickets to a
game with your school's
biggest rival;

Tickets to a Rolling
Stones Concert;
Dormitory rooms;

Ten-speed bicycle;
Airplane tickets home
at vacation time.

In each case, see if you can isolate the major factors that make your elasticity of demand what it is. Are good substitutes available? How much of your income do you spend on this item? How much would your satisfaction change if you had one more unit or one less unit of this item?

Which of the following is likely to be characteristic of a product whose demand is "elastic"?

- A. Good substitutes are not available.
- B. Consumers spend small amounts of their income on it.
- C. Consumers' wants for it are not urgent, and can easily be postponed.
- D. All of the above.

Which of the following is likely to be characteristic of a product whose demand is "inelastic"?

- A. Good substitutes are available.
- B. Consumers spend large amounts of their incomes on it.
- C. Consumers' wants for it are urgent, and cannot easily be postponed.
- D. None of the above.