

## LECTURE NOTE 01

# THE ECONOMIC PROBLEM: SCARCITY AND CHOICE

*Outline of today's lecture*

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## I. Scope and Method of Economics

**economics** The study of how individuals and societies choose to use the scarce resources that nature and previous generations have provided.

- The key word in this definition is choose.

**scarce** Limited.

**microeconomics** The branch of economics that examines the functioning of individual industries and the behavior of individual decision-making units—that is, business firms and households.

**macroeconomics** The branch of economics that examines the economic behavior of aggregates—income, employment, output, and so on—on a national scale.

- Microeconomics looks at the individual unit—the household, the firm, the industry. It sees and examines the “trees.”
- Macroeconomics looks at the whole, the aggregate. It sees and analyzes the “forest.”

## II. Economic Problem, Scarcity, Choice and Opportunity Cost

Three basic questions must be answered in order to understand an economic system:

1. What gets produced?
2. How is it produced?
3. Who gets what is produced?

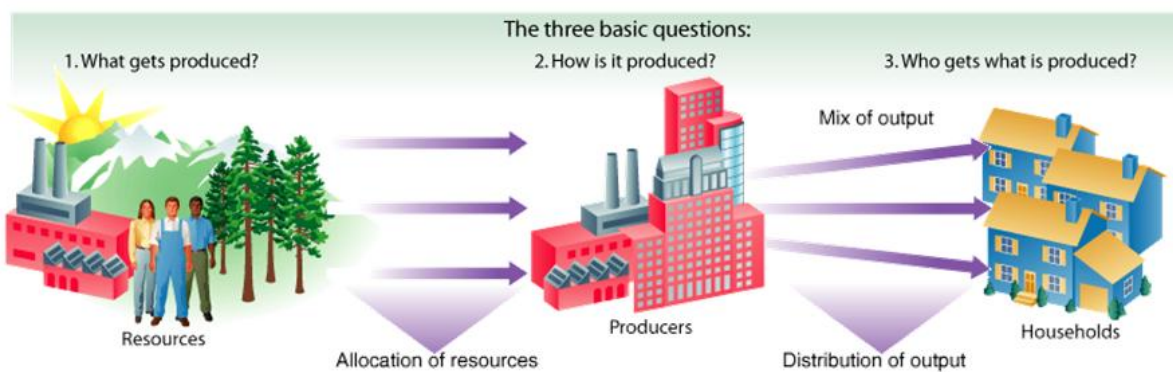


FIGURE 2.1 The Three Basic Questions

**capital** Things that are themselves produced and that are then used in the production of other goods and services.

**factors of production (or factors)** The inputs into the process of production. Another word for resources.

**production** The process that transforms scarce resources into useful goods and services.

**inputs or resources** Anything provided by nature or previous generations that can be used directly or indirectly to satisfy human wants.

**outputs** Usable products

**opportunity costs** The best alternative that we give up, or forgo, when we make a choice or decision.

- When asked how much a movie costs, most people cite the ticket price.
  - For an economist, this is only part of the answer: to see a movie takes not only a ticket but also time.
  - The opportunity cost of going to a movie is the value of the other things you could have done with the same money and time.
- If you decide to take time off from work, the opportunity cost of your leisure is the pay that you would have earned had you worked.
- Part of the cost of a university education is the income you could have earned by working full-time instead of going to school.
- If a firm purchases a new piece of equipment for \$3,000, it does so because it expects that equipment to generate more profit.
  - There is an opportunity cost, however, because that \$3,000 could have been deposited in an interest-earning account.
- To a society, the opportunity cost of using resources to launch astronauts on a space shuttle is the value of the private/civilian or other government goods that could have been produced with the same resources.
- Opportunity costs arise because resources (including *time*) are scarce (limited).

**Components of Opportunity Cost** Direct money cost of a choice may only be a part of opportunity cost of that choice.

Opportunity cost of a choice = explicit costs + implicit costs
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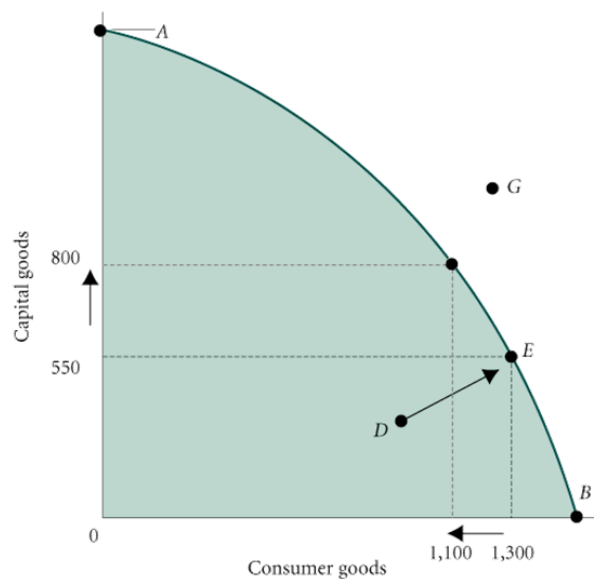
**Explicit cost** TL's actually paid out for a choice (Accounting cost)

**Implicit cost** value of something sacrificed when no direct payment is made

- Opportunity cost of investing on education
  - Explicit cost: tuition and fees
  - Implicit cost: time or forgone income
  
- Opportunity cost of a typical firm

<b>Explicit cost</b>	<b>Implicit cost</b>
Rent paid out	Owner's rent forgone
Manager's salaries	Owner's return from investment
Worker's wages	Owner's labor income forgone
Cost of raw material	
Interest on loans	

**production possibility frontier (ppf)** A graph that shows all the combinations of goods and services that can be produced if all of society's resources are used efficiently.

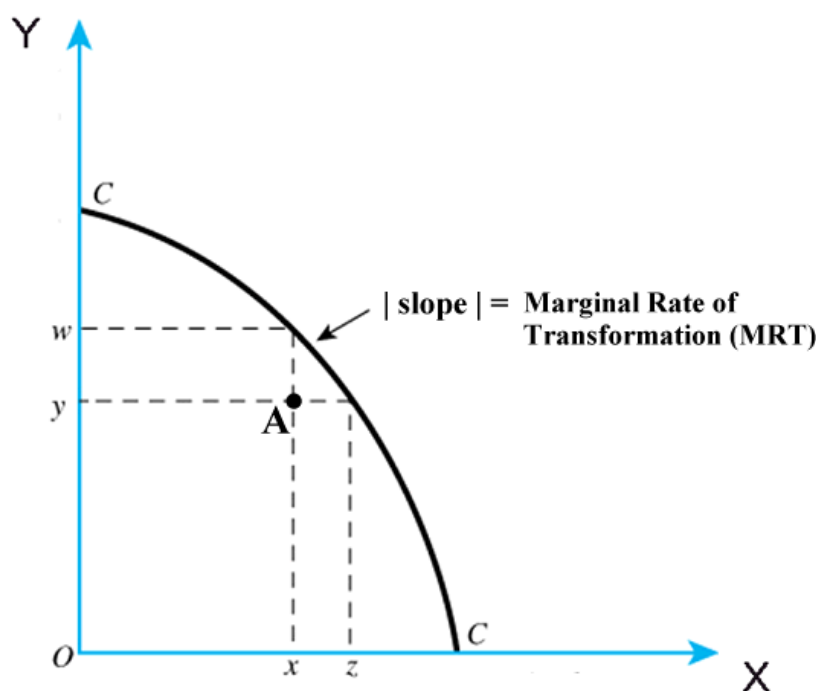


**FIGURE 2.3** Production Possibility Frontier

**Unemployment** During economic downturns or recessions, industrial plants run at less than their total capacity. When there is unemployment of labor and capital, we are not producing all that we can.

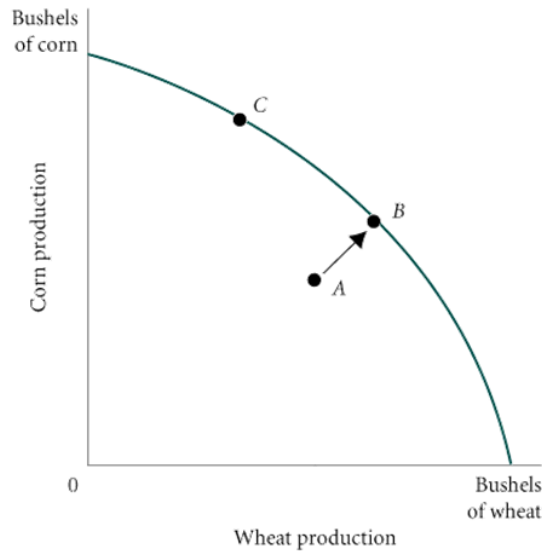
**marginal rate of transformation (MRT)** The absolute value of the slope of the production possibility frontier (ppf).

$$MRT_{yx} = |slope| = \left| \frac{\Delta Y}{\Delta X} \right| = \left| \frac{dY}{dX} \right|$$



**Inefficient points** All points inside the production possibility frontier (such as point A above) are feasible but productively inefficient.

- All points outside the curve (such as X) are infeasible with the given resources and thus *unattainable*.

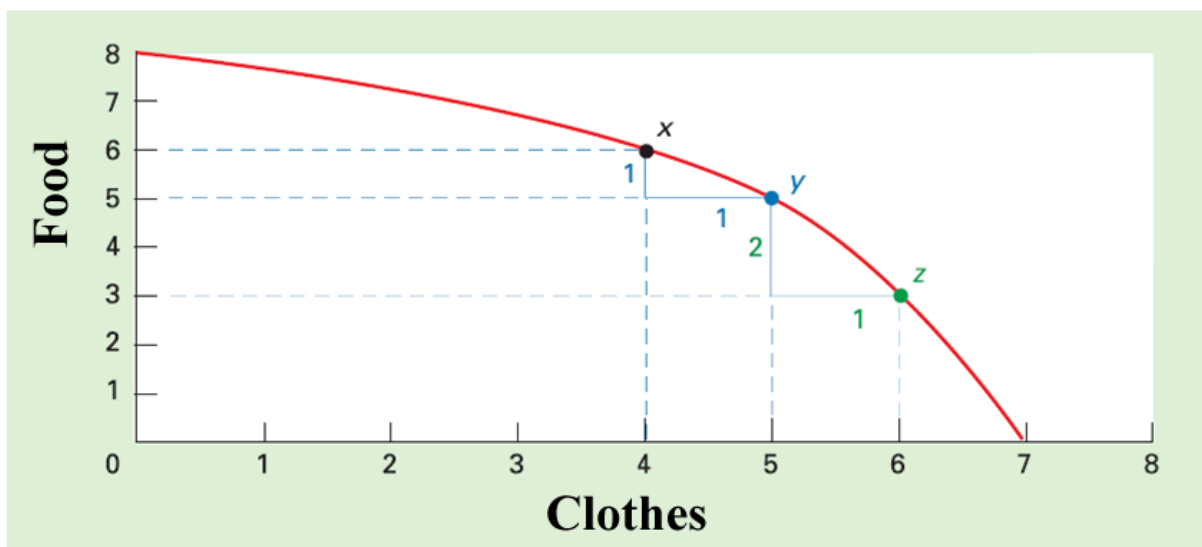


**FIGURE 2.4 Inefficiency from Misallocation of Land in Farming**

### Law of Increasing Opportunity Cost

According to law of increasing opportunity cost:

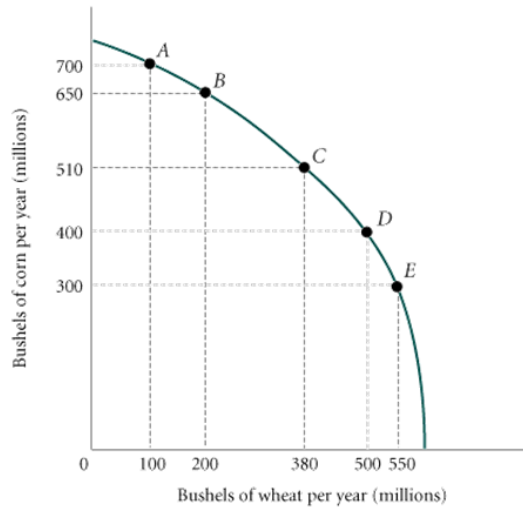
- The more of something we produce
- The greater the opportunity cost of producing even more of it
- This principle applies to all of society's production choices
- PPF's slope shows the opportunity costs concept. A bowed-out PPF illustrates law of increasing opportunity cost.



## The Law of Increasing Opportunity Cost

**TABLE 2.1** Production Possibility Schedule for Total Corn and Wheat Production in Ohio and Kansas

POINT ON PPF	TOTAL CORN PRODUCTION (MILLIONS OF BUSHELS PER YEAR)	TOTAL WHEAT PRODUCTION (MILLIONS OF BUSHELS PER YEAR)
A	700	100
B	650	200
C	510	380
D	400	500
E	300	550

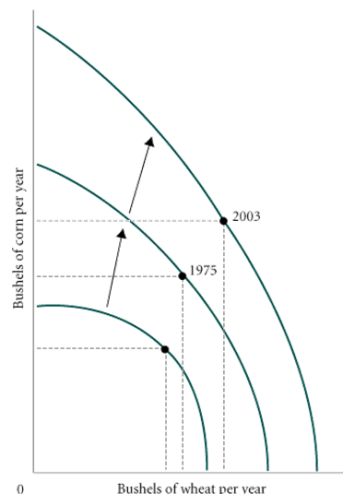


**FIGURE 2.5** Corn and Wheat Production in Ohio and Kansas

### ➤ Law of increasing opportunity cost does not always hold!

- For example, imagine an economy that produces two products: left moccasins and right moccasins
- What will the PPF look like?
- Why?

**economic growth** An increase in the total output of an economy. It occurs when a society acquires new resources or when it learns to produce more using existing resources.



**FIGURE 2.6** Economic Growth Shifts the ppf Up and to the Right

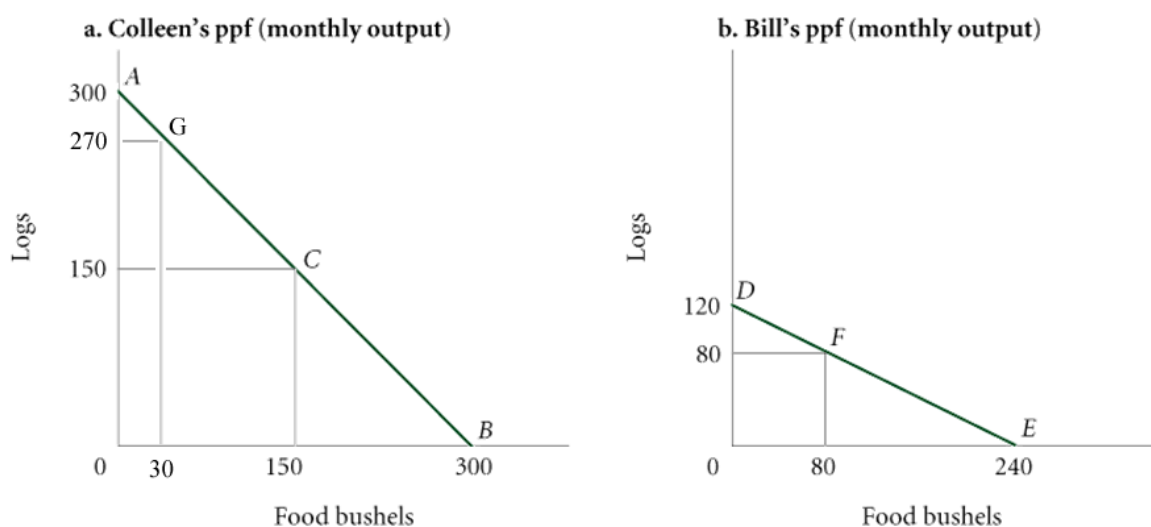
### III. Specialization, Exchange, and Comparative Advantage

**absolute advantage** A producer has an absolute advantage over another in the production of a good or service if he or she can produce the good or service using fewer resources, including time.

**comparative advantage** A producer has a comparative advantage over another in the production of a good or service if it can produce that product at a lower opportunity cost.

**theory of comparative advantage** Ricardo's theory that specialization and free trade will benefit all trading parties, even those that may be absolutely more efficient producers.

- **Example** Suppose there are two survivors of a plane crash, Colleen, and Bill. They find themselves in an island.
- Below you see the *Production Possibility Frontiers* of Colleen and Bill.
- Suppose that initially Colleen producing at point C and Bill producing at point F.

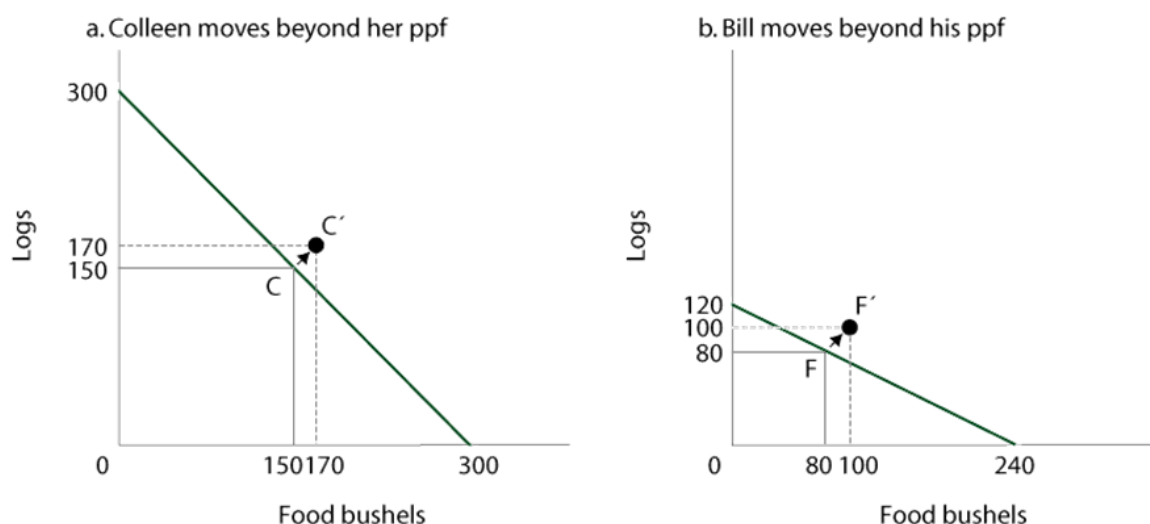


**FIGURE 2.8** Production Possibility Frontiers with No Trade



- Absolute Advantage
  - Since Colleen can cut more logs per month than Bill, we say that she has an absolute advantage in the production of logs. Similarly, Colleen has also an absolute advantage over Bill in the production of food.
    - So, Colleen has an absolute advantage in the production of both goods!
    - You might conclude that it would benefit Colleen to move to the other side of the island and be by herself → It is not correct! Let us see why →
  
- Comparative Advantage
  - Colleen's opportunity cost of producing Food is 1
  - Bill's opportunity cost of producing Food is  $\frac{1}{2}$
  - So Bill has a comparative advantage in food production, he should be specialised in Food production.
  
  - Colleen's opportunity cost of producing Logs is 1
  - Bill's opportunity cost of producing Logs is 2
  - So Colleen has a comparative advantage in Logs production, he should be specialised in Logs production.
  
- Ricardo then argues that two parties can benefit from specialization and trade even if one party has an absolute advantage in the production of *both* goods.
  
- Let's see if specialization and trade can work.
  - If Bill spends all his time on food, he produces 240 bushels in a month (Point E in Figure 2.8).
  - Colleen can produce 30 bushels of food and 270 logs (Point G in Figure 2.8).
    - In this way, together they produce 270 logs and 270 bushels of food, which is more than the 230 logs and 230 bushels they produced when not specializing.
  - Thus, by specializing in the production of the good in which they enjoyed a comparative advantage, there are more of both goods.

- Finally, we arrange a trade, and the result is shown in Figures 2.9(a) and 2.9(b).
  - Bill trades 140 bushels of food to Colleen for 100 logs; and he ends up with 100 logs and 100 bushels of food
    - 20 more of each than he would have had before the specialization and trade.
  - Colleen ends up with 170 logs and 170 bushels,
    - again 20 more of each than she would have had before the specialization and trade.
  - Both are better off. Both move beyond their individual production possibilities.



**FIGURE 2.9** Colleen and Bill Gain from Trade

Although it exists only as an abstraction, the ppf illustrates a number of very important concepts that we shall use throughout the rest of this semester:

- scarcity,
- unemployment,

- inefficiency,
- opportunity cost,
- the law of increasing opportunity cost,
- economic growth, and
- the gains from trade.

## IV. Economic Systems

**command economy** An economy in which a central government either directly or indirectly sets output targets, incomes, and prices.

**laissez-faire economy (free market)** Literally from the French: “allow [them] to do.” An economy in which individual people and firms pursue their own self-interests without any central direction or regulation.

**market** The institution through which buyers and sellers interact and engage in exchange.

**Income** is the amount that a household *earns each year*. It comes in a number of forms: wages, salaries, interest, and the like.

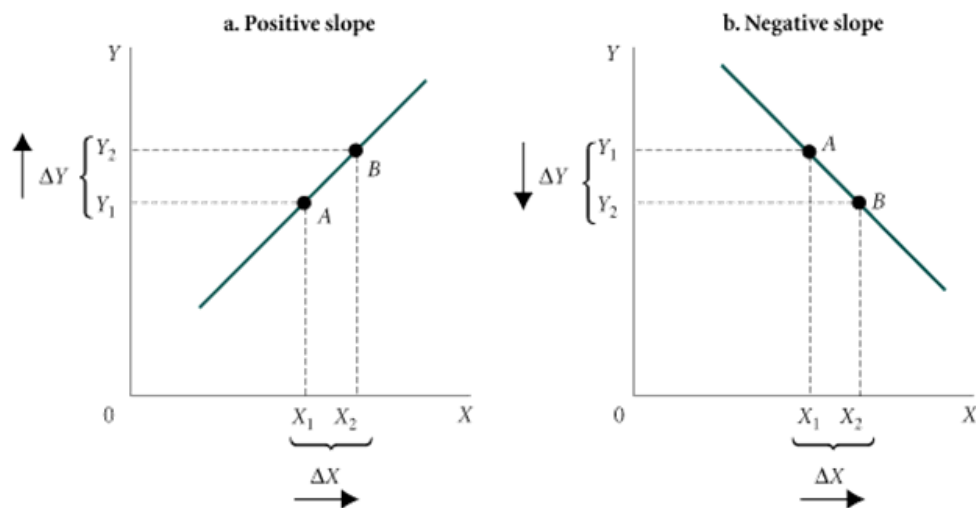
**Wealth** is the amount that households have *accumulated* out of past income through saving or inheritance.

**Mixed System** The differences between command economies and laissez-faire economies in their pure forms are enormous. In fact, these pure forms do not exist in the world; all real systems are in some sense “mixed.”

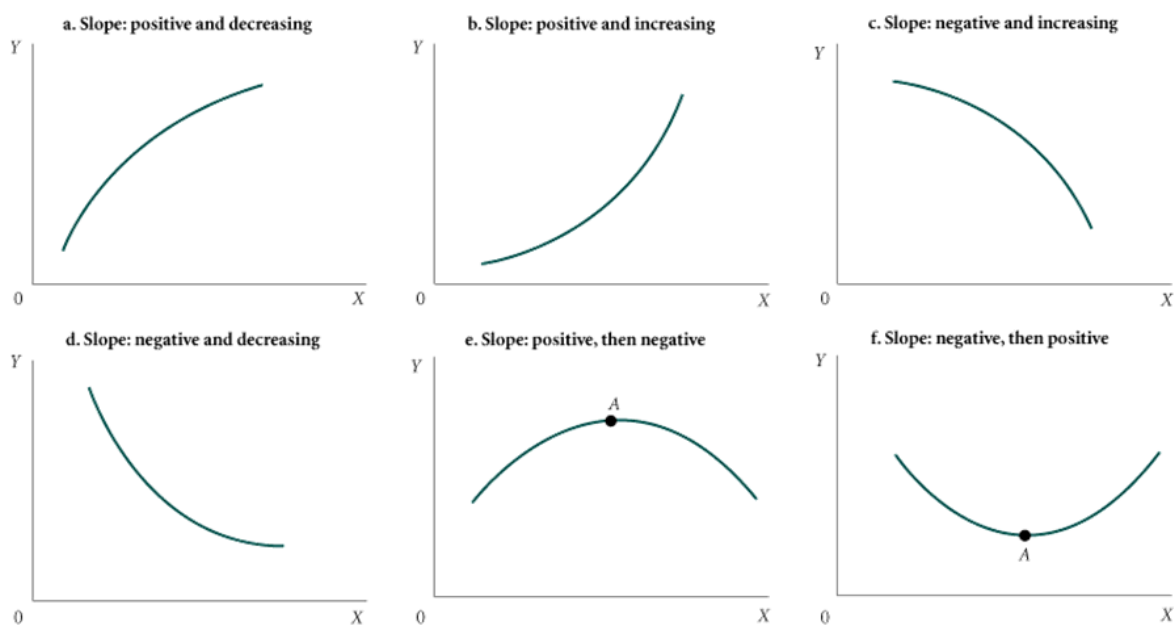
## V. Mathematical Refreshment

**A graph** is a two-dimensional representation of a set of numbers, or data.

- An upward-sloping line describes a positive relationship between X and Y.
- A downward-sloping line describes a negative relationship between X and Y.



**FIGURE 1A.4 A Curve with (a) Positive Slope and (b) Negative Slope**



**FIGURE 1A.5 Changing Slopes Along Curves**