MAP 3

Utility, Choice, Market Demand

EARN

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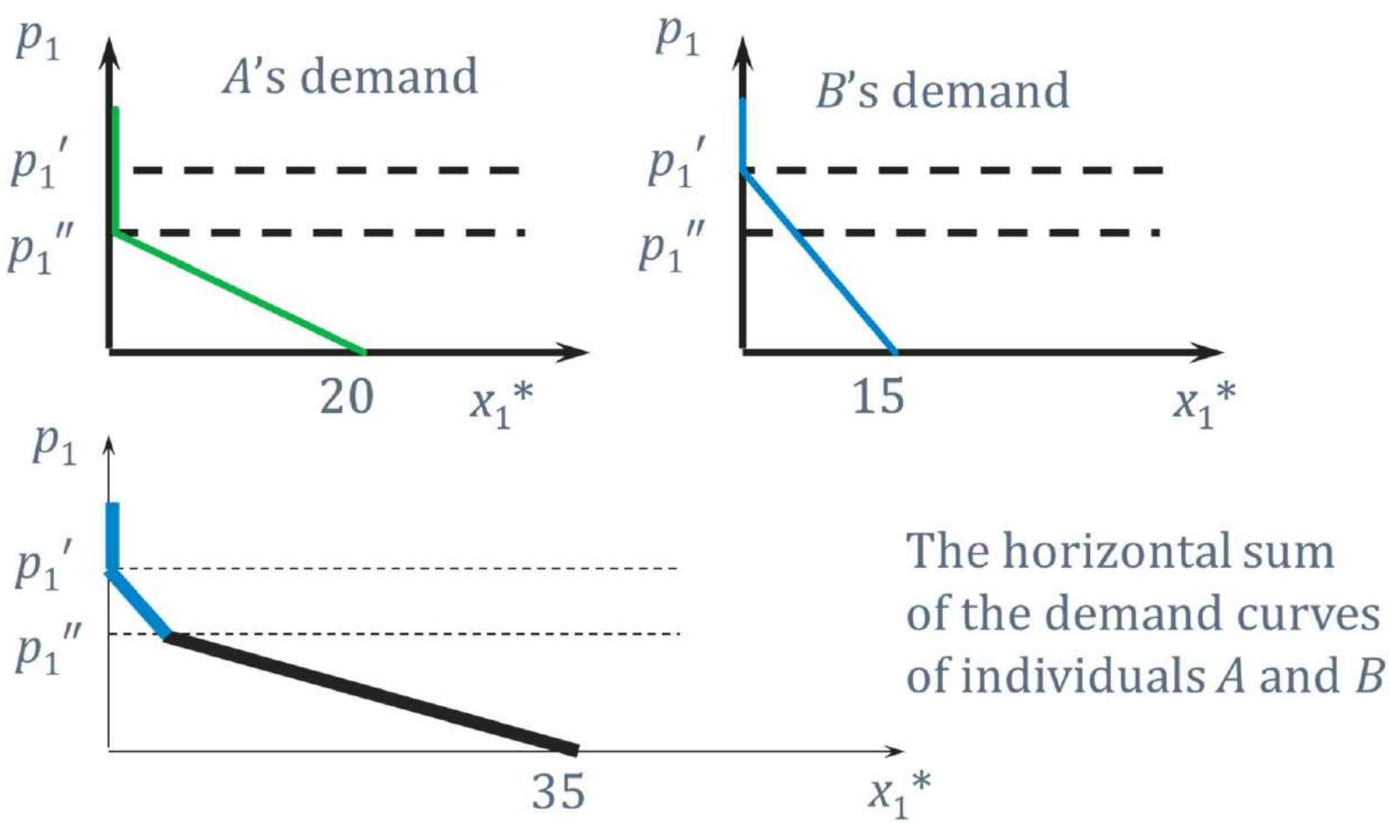
The market inverse demand curve for any good is

a. Independent of individuals' inverse demand curves for the good.
b. The vertical summation of individuals' inverse demand curves (along price axis).
c. The horizontal summation of individuals' inverse demand curves (along quantity axis).
d. Derived from the firm's marginal cost of production.



In the figure below, X and Y are both goods. Which point represents the most preferred affordable bundle?

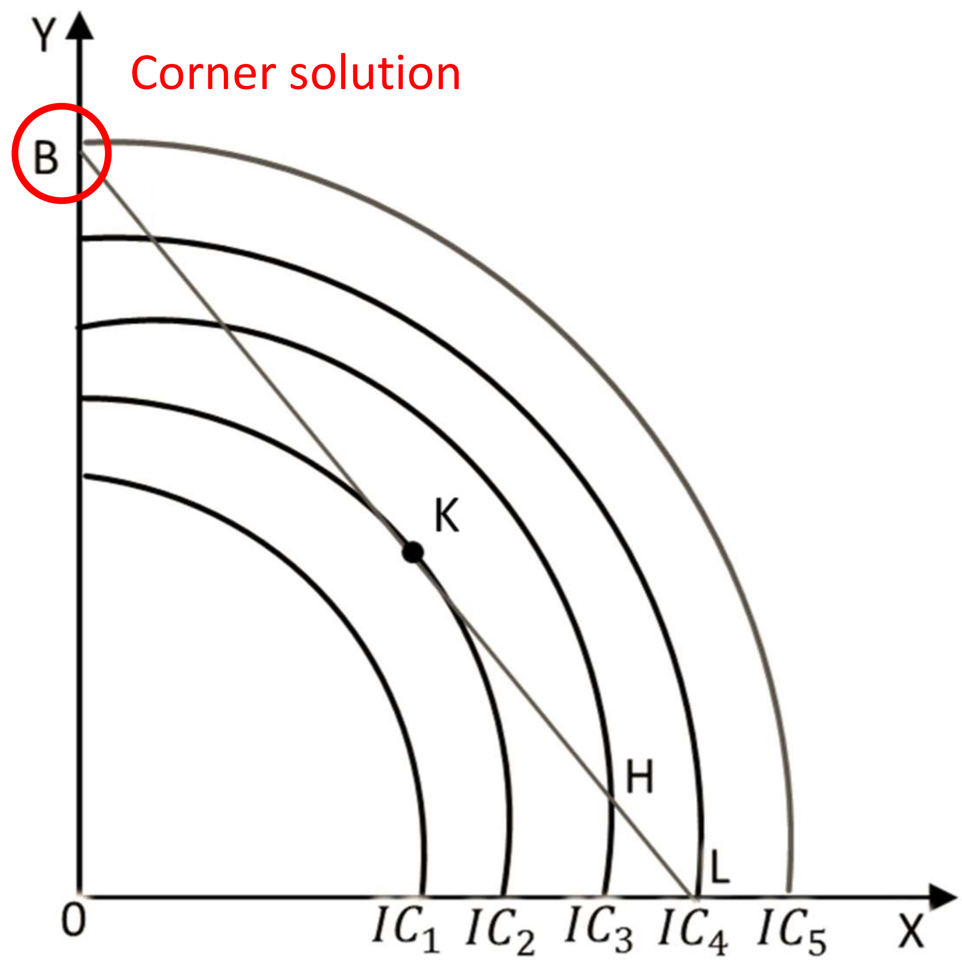
a. B.

b. L.

c. K.

d. H.

Correct answer.



Suppose an individual's utility is given by a Cobb-Douglas utility function $U(x, y) = x \cdot \sqrt{y}$. With a bundle of goods A $(x, y) = (4, 16)$ his utility is $U(4, 16) = 4 \cdot \sqrt{16} = 16$. With a bundle B $(x, y) = (4, 4)$ his utility is $U(3, 4) = 4 \cdot \sqrt{4} = 8$. Then:

a. The individual is indifferent between bundle A and bundle B.
b. Bundle A is twice as costly as bundle B.
c. Bundle A is preferred twice as much as bundle B.
d. Bundle A is preferred to bundle B.

Utility Functions – 3

Utility is an ordinal (i.e. ordering) concept.

- E.g., if $u(x) = 6$ and $u(y) = 2$ then bundle x is strictly preferred to bundle y. But x is not preferred three times as much as is y.

Suppose that a consumer has Cobb-Douglas preferences, expressed as $U(X,Y) = X^a \cdot Y^b$. The marginal utilities for goods X and Y are, respectively, $a \cdot X^{a-1} \cdot Y^b$ and $b \cdot X^a \cdot Y^{b-1}$. The same consumer has a budget m that can be spent on either X or Y. The price for X is p_X, and the price for Y is p_Y. Which of the answers below does not correspond to the system of equations that should be solved to give the consumer's optimal choice?

a. $\begin{cases} -\frac{a \cdot X^{a-1} \cdot Y^b}{b \cdot X^a \cdot Y^{b-1}} = -\frac{p_X}{p_Y} \\ m = p_X \cdot X + p_Y \cdot Y \end{cases}$

b. $\begin{cases} -\frac{a \cdot X^{a-1} \cdot Y^b}{b \cdot X^a \cdot Y^{b-1}} = \frac{p_X}{p_Y} \\ m = p_X \cdot X + p_Y \cdot Y \end{cases}$

c. $\begin{cases} a \cdot p_Y \cdot Y = b \cdot p_X \cdot X \\ m = p_X \cdot X + p_Y \cdot Y \end{cases}$

d. $\begin{cases} Y = \frac{b}{a} \cdot \frac{p_X}{p_Y} \cdot X \\ X = \frac{m}{p_X} - \frac{p_Y}{p_X} \cdot Y \end{cases}$

Correct answer.

Slope of the indifference curve is equal to slope of the budget constraint:

$$MRS = -\frac{MU_X}{MU_Y} = -\frac{p_X}{p_Y}$$

$$-\frac{a \cdot X^{a-1} \cdot Y^b}{b \cdot X^a \cdot Y^{b-1}} = -\frac{p_X}{p_Y}$$

$$\frac{a \cdot X^{-1}}{b \cdot Y^{-1}} = \frac{p_X}{p_Y}$$

$$a \cdot p_Y \cdot Y = b \cdot p_X \cdot X$$