

Q14. Suppose there are two consumers in the market for a good and their demand functions are as follows: $d_1(p) = 20 - p$ for any price less than or equal to 20, and $d_1(p) = 0$ at any price greater than 20. $d_2(p) = 30 - 2p$ for any price less than or equal to 15 and $d_1(p) = 0$ at any price greater than 15. Find out the market demand function.

Ans:

$$d_1(p) = 20 - p \begin{cases} p \le 20 \\ p > 20 \end{cases}$$

$$d_2(p) = 30 - 2p \begin{cases} p \le 15 \\ p > 15 \end{cases}$$

For price less than Rs 15 $(p \le 15)$

Market demand for a good = $d_1(p) + d_2(p)$

$$= 20 - p + 30 - 2p$$

$$= 50 - 3p$$

For price more than Rs 15 but less than Rs 20 (15

Market demand = $d_1(p) + d_2(p)$

$$= 20 - p + 0$$
 (: for $p > 15$, $d_2(p) = 0$)

$$= 20 - p$$

For price more than 20 (p>20)

Market demand = $d_1(p) + d_2(p)$

= 0 + 0 (: for p>10,
$$d_1(p) = 0$$
, $d_2(p) = 0$)

$$= 0$$

Thus, market demand

$$= 50 - 3p \text{ if } p \le 15$$

$$= 20 - p \text{ if } 15$$

$$= 0 \text{ if } p > 20$$

Q15. Suppose there are 20 consumers for a good and they have identical demand functions: d(p) = 10 - 3p for any price less than or equal to $\frac{10}{3}$ and $d_1(p) = 0$ at any price greater than $\frac{10}{3}$.

What is the market demand function?

Ans:
$$d(p) = 10 - 3p \text{ if } p \le \frac{10}{3}$$

$$d_1(p) = 0$$
 if $p > \frac{10}{3}$

Market demand = Summation of demand of all the consumers in the market

For price
$$\leq \frac{10}{3}$$

Market demand = $20\sum d(p)$ (Since consumers have identical demand curve)

$$= 20 \times (10 - 3p)$$

$$= 200 - 60p$$

For price
$$> \frac{10}{3}$$

Market demand = $20 \times d_1(p)$

$$\pm 20 \times 0$$

$$= 0$$

Market demand function = 200-60p $\begin{cases} if & p \le \frac{10}{3} \\ if & p > \frac{10}{3} \end{cases}$

= 0

********* END *******