

Real Numbers Ex 1.5 Q6

Answer:

(i) Let us assume that $\frac{2}{\sqrt{7}}$ is rational .Then , there exist positive co primes a and b such that

$$\frac{2}{\sqrt{7}} = \frac{a}{b}$$

$$\sqrt{7} = \frac{2b}{a}$$

 $\sqrt{7}$ is rational number which is a contradication.

Hence
$$\frac{2}{\sqrt{7}}$$
 is irrational

(ii) Let us assume that $\frac{3}{2\sqrt{5}}$ is rational .Then , there exist positive co primes a and b such that

$$\frac{3}{2\sqrt{5}} = \frac{a}{b}$$

$$\sqrt{5} = \frac{3b}{2a}$$

 $\sqrt{5}$ is a rational number which is a contradication.

Hence
$$\frac{3}{2\sqrt{5}}$$
 is irrational

(iii) Let us assume that $4+\sqrt{2}\,$ is rational .Then , there exist positive co primes a and b such that

$$4 + \sqrt{2} = \frac{a}{b}$$

$$\sqrt{2} = \frac{a}{b} - 4$$

$$\sqrt{2} = \frac{a - 4b}{b}$$

 $\sqrt{2}$ is a rational number which is a contradication.

Hence $4 + \sqrt{2}$ is irrational

(iv) Let us assume that $5\sqrt{2}$ is rational .Then , there exist positive co primes a and b such that

$$5\sqrt{2} = \frac{a}{b}$$

$$\sqrt{2} = \frac{a}{b} - 5$$

$$\sqrt{2} = \frac{a-5b}{b}$$

 $\sqrt{2}$ is a rational number which is a contradication.

Hence $5\sqrt{2}$ is irrational

Real Numbers Ex 1.5 Q7

Answer

Let us assume that $2-\sqrt{3}$ is rational .Then, there exist positive co primes a and b such that

$$2 - \sqrt{3} = \frac{a}{b}$$

$$\sqrt{3} = 2 - \frac{a}{b}$$

This implies, $\sqrt{3}$ is a rational number, which is a contradiction.

Hence, $2-\sqrt{3}$ is irrational number.

Real Numbers Ex 1.5 Q8

Answer:

Let us assume that $3+\sqrt{2}$ is rational. Then, there exist positive co primes a and b such that

$$3 + \sqrt{2} = \frac{a}{b}$$

$$\sqrt{2} = \frac{a}{b} - 3$$

$$\sqrt{2} = \frac{a - 3b}{b}$$

This implies,

 $\sqrt{2}$ is a rational number which is a contradication.

Hence $3 + \sqrt{2}$ is irrational

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