



Number System Ex 1.4 Q6

Answer :

(i) Let $\sqrt{2}, 1 + \sqrt{2}$

And, so $1 + \sqrt{2} - \sqrt{2} = 1$

Therefore, $\sqrt{2}$ and $1 + \sqrt{2}$ are two irrational numbers and their difference is a rational number

(ii) Let $4\sqrt{3}, 3\sqrt{3}$ are two irrational numbers and their difference is an irrational number

Because $4\sqrt{3} - 3\sqrt{3} = \sqrt{3}$ is an irrational number

(iii) Let $\sqrt{5}, -\sqrt{5}$ are two irrational numbers and their sum is a rational number

That is $\sqrt{5} + (-\sqrt{5}) = 0$

(iv) Let $2\sqrt{5}, 3\sqrt{5}$ are two irrational numbers and their sum is an irrational number

That is $2\sqrt{5} + 3\sqrt{5} = 5\sqrt{5}$

(v) Let $\sqrt{8}, \sqrt{2}$ are two irrational numbers and their product is a rational number

That is $\sqrt{8} \times \sqrt{2} = \sqrt{16} = 4$

(vi) Let $\sqrt{2}, \sqrt{3}$ are two irrational numbers and their product is an irrational number

That is $\sqrt{2} \times \sqrt{3} = \sqrt{6}$

(vii) Let $\sqrt{8}, \sqrt{2}$ are two irrational numbers and their quotient is a rational number

That is $\frac{\sqrt{8}}{\sqrt{2}} = \frac{2\sqrt{2}}{\sqrt{2}} = 2$

(viii) Let $\sqrt{2}, \sqrt{3}$ are two irrational numbers and their quotient is an irrational number

That is $\sqrt{2} \div \sqrt{3} = \frac{\sqrt{2}}{\sqrt{3}}$

Number System Ex 1.4 Q7

Answer :

Let

$a = 0.23233233323332...$

$b = 0.21211211121112...$

Here the decimal representation of a and b are non-terminating and non-repeating. So we observe that in first decimal place of a and b have the same digit 2 but digit in the second place of their decimal representation are distinct. And the number a has 3 and b has 1. So $a > b$.

Hence two rational numbers are $[0.222, 0.221]$ lying between $0.23233233323332...$ and $0.21211211121112...$

Number System Ex 1.4 Q8

Answer :

Let $a = 0.51511511151115...$ and $b = 0.53533533353335...$

Here the decimal representation of a and b are non-terminating and non-repeating. So we observe that in first decimal place a and b have the same digit 5 but digit in the second place of their decimal representation are distinct. And the number a has 1 and b has 3. So $a < b$.

Hence two rational numbers are $[0.5152, 0.532]$ lying between $0.51511511151115...$ and $0.53533533353335...$

Number System Ex 1.4 Q9

Answer :

Let

$a = 0.2101$

$b = 0.2222... = 0.\overline{2}$

Here a and b are rational numbers. Since a has terminating and b has repeating decimal. We observe that in second decimal place a has 1 and b has 2. So $a < b$.

Hence one irrational number is $[0.220100100010000...]$ lying between 0.2101 and $0.2222...$

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