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 $\sqrt{5}+\left(-\sqrt{5}\right)=0$

(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

$a=0.232332333233332...$

$b=0.212112111211112...$

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 $\boxed{0.222, 0.221}$ lying between $0.232332333233332...$ and $0.212112111211112...$

Number System Ex 1.4 Q8

Answer :

Let $a=0.5151151111511115...$ and $b=0.535335333533335...$

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 $\boxed{0.5152, 0.532}$ lying between $0.5151151111511115...$ and $0.535335333533335...$

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 $\boxed{0.220100100010000...}$ lying between 0.2101 and $0.2222...$

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