



Exercise 1.3

0.73073007300073....

0.74074007400074....

0.76076007600076....

Q9. Classify the following numbers as rational or irrational:

(i) 23

(ii) 225

(iii) 0.3796

(iv) 7.478478...

(v) 1.101001000100001...

Ans: (i) $\sqrt{23}$

We know that on finding the square root of 23, we will not get an integer.

Therefore, we conclude that $\sqrt{23}$ is an irrational number.

(ii) $\sqrt{225}$

We know that on finding the square root of 225, we get 15, which is an integer.

Therefore, we conclude that $\sqrt{225}$ is a rational number.

(iii) 0.3796

We know that 0.3796 can be converted into $\frac{p}{q}$.

While, converting 0.3796 into $\frac{p}{q}$ form, we get

$$0.3796 = \frac{3796}{10000}.$$

The rational number $\frac{3796}{10000}$ can be converted into lowest fractions, to get $\frac{949}{2500}$.

We can observe that 0.3796 can be converted into a rational number.

Therefore, we conclude that 0.3796 is a rational number.

(iv) 7.478478....

We know that 7.478478.... is a non-terminating recurring decimal, which can be converted into

$\frac{p}{q}$ form.

While, converting $7.478478....$ into $\frac{p}{q}$ form, we get

$$x = 7.478478.... \quad(a)$$

$$1000x = 7478.478478.....(b)$$

While, subtracting (a) from (b), we get

$$1000x = 7478.478478....$$

$$\underline{- x = 7.478478....}$$

$$999x = 7471$$

We know that $999x = 7471$ can also be written as

$$x = \frac{7471}{999}.$$

Therefore, we conclude that $7.478478....$ is a rational number.

$$(v) 1.101001000100001....$$

We can observe that the number $1.101001000100001....$ is a non-terminating on recurring decimal.

We know that non-terminating and non-

recurring decimals cannot be converted into $\frac{p}{q}$ form.

Therefore, we conclude that $1.101001000100001....$ is an irrational number.

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