Chapter 1

Real Numbers

Assessment based on Exercise 1.4 Question 3

Question 1:

The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form $\frac{p}{q}$, what can you say about the prime factors of q?

(i) 37.12367985 (ii) $29.\overline{1234567}$ (iii)0.130130013000130000 ...

Solution:

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Assessment based on Exercise 1.4 Question 3

Question 2:

The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form $\frac{p}{q}$, what can you say about the prime factors of q?

(i) 3.142678 (ii) $0.\overline{3}$ (iii) $1.\overline{27}$

Solution:

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Question 3:

The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form $\frac{p}{q}$, what can you say about the prime factors of q?

(i) $2.\overline{27}$ (ii) $0.\overline{16}$ (iii) 1.101001000100001...

Solution:

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Real number

Assessment based on Exercise 1.1 Question 1

Answers

Answer: 1

(i) Rational, prime factors of q will be either 2 or 5 or both.
(ii) Rational, prime factors of q will be either 2 or 5 or both.
(iii) Not rational

Answer: 2

(i) Rational; factors of q are 2 and 5
(ii) Rational; factors of q are other than 2 and 5
(iii) Rational; factors of q are other than 2 and 5

Answer: 3

(i) Rational; factors of q are other than 2 and 5
(ii) Rational; factors of q are other than 2 and 5
(iii) Irrational.