Number System Ex 1.3 Q2

Answer :

(i) Let $x = 0.\overline{4}$

$\Rightarrow x = 0.44444...$

$10x = 4.444...$

$\Rightarrow 10x = 4 + x$

$\Rightarrow 9x = 4$

$\Rightarrow x = \frac{4}{9}$

Hence, $\boxed{0.\overline{4} = \frac{4}{9}}$

(ii) Let $x = 0.\overline{37}$

$\Rightarrow x = 0.373737...$

$\Rightarrow 100x = 37.3737...$

$$\Rightarrow 100x = 37 + 0.3737$$

$$\Rightarrow 100x = 37 + x$$

$$\Rightarrow 99x = 37$$

$$\Rightarrow x = \frac{37}{99}$$

Hence, $\boxed{0.\overline{37} = \frac{37}{99}}$

(iii) Let $x = 0.\overline{54}$

$$\Rightarrow x = 0.545454...$$

$$\Rightarrow 100x = 54.5454...$$

$$\Rightarrow 100x = 54 + 0.5454...$$

$$\Rightarrow 100x = 54 + x$$

$$\Rightarrow 99x = 54$$

$$\Rightarrow x = \frac{54}{99} = \frac{6}{11}$$

Hence, $\boxed{0.\overline{54} = \frac{6}{11}}$

(iv) Let $x = 0.\overline{621}$

$$\Rightarrow x = 0.621621621...$$

$$\Rightarrow 1000x = 621.621621...$$

$$\Rightarrow 1000x = 621 + 0.621621...$$

$$\Rightarrow 1000x = 621 + x$$

$$\Rightarrow 999x = 621$$

$$\Rightarrow x = \frac{621}{999} = \frac{207}{333}$$

$$\Rightarrow x = \frac{23}{37}$$

Hence, $\boxed{0.\overline{621} = \frac{23}{37}}$

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