REAL NUMBERS (CLASS 9)

ASSIGNMENT 1

Express the following recurring decimals into vulgar fractions :

(a) $0.\overline{6}$ (b) $0.\overline{16}$ (c) $0.\overline{234}$ (d) $0.12\overline{54}$

Find the values of a and b if $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

Find the values of *a* and *b* if $\frac{5+\sqrt{6}}{5-\sqrt{6}} = a + b\sqrt{6}$

Give two rational numbers lying between 0.232332333233332... and 0.21211211121111.....

Examine, whether the following numbers are rational or irrational:

(i) $(\sqrt{2}+2)^2$

(ii) $(2-\sqrt{2})x(2+\sqrt{2})$

(iii) $(\sqrt{2}+\sqrt{3})^2$

(iv) $\frac{6}{2\sqrt{6}}$

Express $\frac{7}{64}$ **as a decimal fraction.**

Simplify by rationalising the denominator: $\frac{4+\sqrt{5}}{4-\sqrt{5}} + \frac{4-\sqrt{5}}{4+\sqrt{5}}$

Simplify and express the result in its simplest form:

$\sqrt[3]{2} \times \sqrt{5}$

Represent $0.\overline{57}$ **in the form of** $\frac{p}{q}$.

Simplify and express the result in its simplest form:

(1) $\sqrt[6]{12} \div \left(\sqrt{3} \times \sqrt[3]{2}\right)$

(2) $\sqrt{2} \times \sqrt[3]{3} \times \sqrt[4]{4}$

Simplify :

$$\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225}$$

Are the following statements true or false?
Give reason for your answer.
(i) Every whole number is a natural number. [NCERT]
(ii) Every integer is a rational number.
(iii) Every rational number is an integer.
(iv) Every natural number is a whole number,
(v) Every integer is a whole number.
(vi) Every rational number is a whole number.
Solution:
(i) False, as 0 is not a natural number.
(ii) True.
(iii) False, as $\frac{1}{2}$, $\frac{1}{3}$ etc. are not integers.
(iv) True.
(v) False, ∵ negative natural numbers are not whole numbers.
(vi) False, ∵ proper fraction are not whole numbers

Which of the following is irrational?
(a) 0.15
(b) 0.01516
(c) $0.\overline{1516}$
(d) 0.5015001500015..

Simplify and find the value of

(a) $(729)^{\frac{1}{6}}$

(b) $(64)^{\frac{2}{3}}$

(c) $(243)^{\frac{6}{5}}$

(d) $(21)^{\frac{3}{2}} \times (21)^{\frac{5}{2}}$

(e) $\frac{(81)^{\frac{1}{3}}}{(81)^{\frac{1}{12}}}$