

NCERT Solutions for Class 9 Maths Chapter 1 Number Systems Ex 1.6

Question 1.

Find:

(i) $64^{1/2}$

(ii) $32^{1/5}$

(iii) $125^{1/3}$

Solution.

(i) $64 = 8 \times 8 = 8^2$

$\therefore (64)^{1/2} = (8^2)^{1/2} = 8^{2 \times 1/2} = 8 [(a^m)^n = a^{m \times n}]$

(ii) $32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$

$\therefore (32)^{1/5} = (2^5)^{1/5} = 2^{5 \times 1/5} = 2 [(a^m)^n = a^{m \times n}]$

(iii) $125 = 5 \times 5 \times 5 = 5^3$

$\therefore (125)^{1/3} = (5^3)^{1/3} = 5^{3 \times 1/3} = 5 [(a^m)^n = a^{m \times n}]$

Question 2.

Find:

(i) $9^{3/2}$

(ii) $32^{2/5}$

(iii) $16^{3/4}$

(iv) $125^{-1/3}$

Solution.

(i) $9 = 3 \times 3 = 3^2$

$\therefore (9)^{3/2} = (3^2)^{3/2} = 3^{2 \times 3/2} = 3^3 = 27$

$[(a^m)^n = a^{mn}]$

(ii) $32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$

$\therefore (32)^{2/5} = (2^5)^{2/5} = 2^{5 \times 2/5} = 2^2 = 4$

$[(a^m)^n = a^{mn}]$

(iii) $16 = 2 \times 2 \times 2 \times 2 = 2^4$

$\therefore (16)^{3/4} = (2^4)^{3/4} = 2^{4 \times 3/4} = 2^3 = 8$

$[(a^m)^n = a^{mn}]$

(iv) $125 = 5 \times 5 \times 5 = 5^3$

$\therefore (125)^{-1/3} = (5^3)^{-1/3} = 5^{3 \times (-1/3)} = 5^{-1}$

$= 15 [a^{-n} = 1/a^n]$

Question 3.

Simplify:

(i) $2^{2/3} \times 2^{1/5}$

(ii) $(1/3^3)^7$

(iii) $11^{1/2}/11^{1/4}$

(iv) $7^{1/2} \times 8^{1/2}$

Solution.

(i) $2^{2/3} \cdot 2^{1/5} = 2^{2/3 + 1/5} = 2^{13/15}$

$[a^m \cdot a^n = a^{m+n}]$

(ii) $\left(\frac{1}{3^3}\right)^7 = (3^{-3})^7 = 3^{-3 \times 7} = 3^{-21} = \frac{1}{3^{21}}$
 $\left[\frac{1}{a^n} = a^{-n}\right]$

(iii) $\frac{11^{1/2}}{11^{1/4}} = 11^{1/2} \div 11^{1/4} = 11^{1/2 - 1/4} = 11^{1/4}$
 $[a^m \div a^n = a^{m-n}]$

(iv) $7^{1/2} \cdot 8^{1/2} = (7 \times 8)^{1/2} = (56)^{1/2} [a^m \times b^m = (ab)^m]$

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