

Mathematics

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(Chapter – 1)(Number Systems)

(Class – 9)

Exercise 1.6

Question 1:

Find:

(i) $64^{\frac{1}{2}}$

(ii) $32^{\frac{1}{5}}$

(iii) $125^{\frac{1}{3}}$

 **Answer 1:**

(i) $64^{\frac{1}{2}} = (8^2)^{\frac{1}{2}} = 8^{2 \times \frac{1}{2}} = 8$

(ii) $32^{\frac{1}{5}} = (2^5)^{\frac{1}{5}} = 2^{5 \times \frac{1}{5}} = 2$

(iii) $125^{\frac{1}{3}} = (5^3)^{\frac{1}{3}} = 5^{3 \times \frac{1}{3}} = 5$

Question 2:

Find:

(i) $9^{\frac{3}{2}}$

(ii) $32^{\frac{2}{5}}$

(iii) $16^{\frac{3}{4}}$

(iv) $125^{-\frac{1}{3}}$

 **Answer 2:**

(i) $9^{\frac{3}{2}} = (3^2)^{\frac{3}{2}} = 3^{2 \times \frac{3}{2}} = 3^2 = 9$

(ii) $32^{\frac{2}{5}} = (2^5)^{\frac{2}{5}} = 2^{5 \times \frac{2}{5}} = 2^2 = 4$

(iii) $16^{\frac{3}{4}} = (2^4)^{\frac{3}{4}} = 2^{4 \times \frac{3}{4}} = 2^3 = 8$

(iv) $125^{-\frac{1}{3}} = (5^3)^{-\frac{1}{3}} = 5^{3 \times -\frac{1}{3}} = 5^{-1} = \frac{1}{5} = \frac{1}{5}$

Question 3:

Simplify:

(i) $2^{\frac{2}{3}} \cdot 2^{\frac{1}{5}}$

(ii) $\left(\frac{1}{3^3}\right)^7$

(iii) $\frac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}}$

(iv) $7^{\frac{1}{2}} \cdot 8^{\frac{1}{2}}$

 **Answer 3:**

(i) $2^{\frac{2}{3}} \cdot 2^{\frac{1}{5}} = 2^{\frac{2}{3} + \frac{1}{5}} = 2^{\frac{10+3}{15}} = 2^{\frac{13}{15}}$

(ii) $\left(\frac{1}{3^3}\right)^7 = (3^{-3})^7 = 3^{-21}$

(iii) $\frac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}} = 11^{\frac{1}{2}} \times 11^{-\frac{1}{4}} = 11^{\frac{1}{2} - \frac{1}{4}} = 11^{\frac{2-1}{4}} = 11^{\frac{1}{4}}$

(iv) $7^{\frac{1}{2}} \cdot 8^{\frac{1}{2}} = (7 \times 8)^{\frac{1}{2}} = 56^{\frac{1}{2}}$