

① Divide $10\sqrt{10}$ by $2\sqrt{5}$

Sol $\rightarrow 10\sqrt{10} \div 2\sqrt{5} = \frac{10 \times \sqrt{2} \times \sqrt{5}}{2\sqrt{5}} = 5\sqrt{2}$ A

② \rightarrow Laws of Exponents for Real Numbers

Sol If $a > 0$ be a real no. and x, y be rational numbers

Then (i) $a^x \cdot a^y = a^{x+y}$ (ii) $(a^x)^y = a^{xy}$

(iii) $\frac{a^x}{a^y} = a^{x-y}$

(iv) $a^x \cdot b^x = (ab)^x$ (v) $a^0 = 1$

(3) Simplify \rightarrow (i) $17^2 \cdot 17^5$ (ii) $(5^2)^3$

Sol (i) $\rightarrow 17^2 \cdot 17^5 = 17^{2+5} = 17^7$ [using $a^x \cdot a^y = a^{x+y}$]

(ii) $\rightarrow (5^2)^3 = 5^{2 \times 3} = 5^6$ using $(a^x)^y = a^{xy}$

(4) Simplify (i) $\frac{7^{\frac{1}{5}}}{7^{\frac{1}{3}}}$ (ii) $13^{\frac{1}{5}} \cdot 15^{\frac{1}{5}}$

Sol (i) $\frac{7^{\frac{1}{5}}}{7^{\frac{1}{3}}} = 7^{\frac{1}{5} - \frac{1}{3}} = 7^{\frac{3-5}{15}} = 7^{-\frac{2}{15}} = \frac{1}{7^{\frac{2}{15}}}$

(ii) $13^{\frac{1}{5}} \cdot 15^{\frac{1}{5}} = (13 \times 15)^{\frac{1}{5}} = (195)^{\frac{1}{5}} \because a^x \cdot b^x = (ab)^x$

5. Simplify $\rightarrow 16^{-\frac{1}{4}} \times (16)^{\frac{1}{4}}$

Sol $\rightarrow (16)^{-\frac{1}{4}} \times (16)^{\frac{1}{4}} = 16^{-\frac{1}{4} + \frac{1}{4}} = (16)^{\frac{-1+1}{4}} = (16)^{\frac{0}{4}} = (16)^0 = 1$ ($a^0 = 1$)

H. W.

① Write Laws of Exponents in your notebook

② Simplify $\rightarrow 3^{\frac{2}{3}}, 3^{\frac{1}{3}}$

③ Simplify $\rightarrow \frac{(15)^{\frac{1}{4}}}{9^{\frac{1}{4}}}$

④ Evaluate \rightarrow (i) $(2^3)^2$ (ii) $(\frac{1}{3^5})^4$

⑤ Find (i) $15^2, 15^{-5}$ (ii) $(17^2)^{-2}$

⑥ Write in simplified form $\rightarrow \frac{12^{\frac{1}{5}}}{27^{\frac{1}{5}}}$