

$$\begin{aligned} 1 \text{ (i)} \quad & 64^{\frac{1}{2}} \\ & = (8^2)^{\frac{1}{2}} \\ & = 8^{2 \times \frac{1}{2}} \\ & = 8 \end{aligned}$$

$$\begin{aligned} 1 \text{ (ii)} \quad & 32^{\frac{1}{5}} \\ & = (2^5)^{\frac{1}{5}} \\ & = 2^{5 \times \frac{1}{5}} \\ & = 2 \end{aligned}$$

$$\begin{aligned} 1 \text{ (iii)} \quad & 125^{\frac{1}{3}} \\ & = (5^3)^{\frac{1}{3}} \\ & = 5^{3 \times \frac{1}{3}} \\ & = 5 \end{aligned}$$

$$\begin{aligned} 2 \text{ (i)} \quad & 9^{\frac{3}{2}} \\ & = (3^2)^{\frac{3}{2}} \\ & = 3^{2 \times \frac{3}{2}} \\ & = 3^3 \\ & = 27 \end{aligned}$$

$$\begin{aligned} 2 \text{ (ii)} \quad & 32^{\frac{2}{5}} \\ & = (2^5)^{\frac{2}{5}} \\ & = 2^{5 \times \frac{2}{5}} \\ & = 2^2 \\ & = 4 \end{aligned}$$

$$\begin{aligned} 2 \text{ (iii)} \quad & 16^{\frac{3}{4}} \\ & = (2^4)^{\frac{3}{4}} \\ & = 2^{4 \times \frac{3}{4}} \\ & = 2^3 \\ & = 8 \end{aligned}$$

$$\begin{aligned} 2 \text{ (iv)} \quad & 125^{-\frac{1}{3}} \\ & = (5^3)^{-\frac{1}{3}} \\ & = 5^{3 \times -\frac{1}{3}} \\ & = 5^{-1} \\ & = \frac{1}{5} \end{aligned}$$

$$\begin{aligned} 3 \text{ (i)} \quad & 2^{\frac{2}{3}} \times 2^{\frac{1}{5}} \\ & = 2^{\frac{2}{3} + \frac{1}{5}} \\ & = 2^{\frac{13}{15}} \end{aligned}$$

$$\begin{aligned} 3 \text{ (ii)} \quad & \left(\frac{1}{3^3}\right)^7 \\ & = \frac{1^7}{3^{3 \times 7}} \\ & = \frac{1}{3^{21}} \end{aligned}$$

$$\begin{aligned} 3 \text{ (iii)} \quad & \frac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}} \\ & = 11^{\frac{1}{2} - \frac{1}{4}} \\ & = 11^{\frac{2-1}{4}} \\ & = 11^{\frac{1}{4}} \end{aligned}$$

$$\begin{aligned} 3 \text{ (iv)} \quad & 7^{\frac{1}{2}} \times 8^{\frac{1}{2}} \\ & = (7 \times 8)^{\frac{1}{2}} \\ & = 56^{\frac{1}{2}} \end{aligned}$$