

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

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

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

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

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

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

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

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

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

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

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