

1. $\left(64a^{-6}b^{\frac{6}{5}}\right)^{\frac{1}{2}}$

2. $\left(\frac{m^{\frac{5}{2}}}{Q^{-\frac{3}{4}}}\right)^{-6}$

3. $\frac{x^{\frac{2}{3}}y^{-\frac{1}{2}}}{x^{\frac{1}{2}}y^{-\frac{1}{4}}}$

$$\begin{aligned} 1. \left(64a^{-6}b^{\frac{6}{5}} \right)^{\frac{1}{2}} &= 64^{\frac{1}{2}} a^{-6 \cdot \frac{1}{2}} b^{\frac{6}{5} \cdot \frac{1}{2}} \\ &= \sqrt{64} a^{-3} b^{\frac{3}{5}} = \frac{8 b^{\frac{3}{5}}}{a^3} \end{aligned}$$

$$\begin{aligned} 2. \left(\frac{m^{\frac{5}{2}}}{q^{\frac{3}{4}}} \right)^{-6} &= \frac{m^{\frac{5}{2} \cdot -6}}{q^{\frac{3}{4} \cdot -6}} = \frac{m^{-15}}{q^{-\frac{9}{2}}} = \frac{1}{m^{15} q^{\frac{9}{2}}} \end{aligned}$$

$$\begin{aligned} 3. \frac{x^{\frac{2}{3}} y^{-\frac{1}{2}}}{x^{\frac{1}{2}} y^{-\frac{1}{4}}} &= x^{\frac{2}{3} - \frac{1}{2}} y^{-\frac{1}{2} - -\frac{1}{4}} \\ &= x^{\frac{4}{6} - \frac{3}{6}} y^{-\frac{2}{4} + \frac{1}{4}} \\ &= x^{\frac{1}{6}} y^{-\frac{1}{4}} = \frac{x^{\frac{1}{6}}}{y^{\frac{1}{4}}} \text{ or } \frac{\sqrt[6]{x}}{\sqrt[4]{y}} \end{aligned}$$