

Solución

1)

$$\begin{aligned} \frac{1}{2}^{1/2} \cdot \frac{1}{2}^{2/3} &= \frac{1}{2}^{\frac{1}{2} + \frac{2}{3}} \\ &= \frac{1}{2}^{\frac{3+4}{6}} \\ &= \frac{1}{2}^{7/6} \end{aligned}$$

2)

$$\begin{aligned} \frac{3^2 \sqrt{3}}{3^5} &= \frac{3^2 \cdot 3^{1/2}}{3^5} \\ &= \frac{9^{2+1/2}}{3^5} \\ &= \frac{9^{4/2}}{3^5} \\ &= \frac{9^{5/2}}{3^5} = \frac{3^{5/2}}{1^5} = 3^{-5/2} \end{aligned}$$

3)

$$\begin{aligned} \frac{\frac{2}{5}}{\frac{2}{5}^{3/4}} &= \frac{2}{5}^1 \cdot \frac{2}{5}^{-3/4} \\ &= \frac{2}{5}^{1-3/4} \\ &= \frac{2}{5}^{1/4} \end{aligned}$$