

Ex 4.1.10

$$8 \cdot 4 \cdot 2 = 64$$

e)  $(\sqrt[8]{\sqrt[4]{\sqrt[2]{2}}})^{128} = \left( \sqrt[64]{2} \right)^{128} = 2^2 = 4$

$\parallel$   $\sqrt[64]{2^{128}} = 4$

f)  $\sqrt{3 \cdot \sqrt{3}} = \sqrt{\sqrt{9 \cdot 3}} = \sqrt{\sqrt{27}} = \sqrt[4]{27}$

or  $\parallel$

$$\sqrt{3} \cdot \sqrt{\sqrt{3}} = \sqrt{3} \cdot \sqrt[4]{3} = \sqrt[4]{3^2} \sqrt[4]{3} = \sqrt[4]{9 \cdot 3} = \sqrt[4]{27}$$

## Ex 4.1.11

$$\begin{aligned} \text{c) } \sqrt[5]{a^3} (\sqrt[5]{a^2})^6 &= \sqrt[5]{a^3} \sqrt[5]{a^{12}} \\ &= \sqrt[5]{a^3 \cdot a^{12}} \\ &= \sqrt[5]{a^{15}} \\ &= a^3 \end{aligned}$$

$$\begin{aligned} \text{d) } \sqrt[4]{a^3} \sqrt[3]{a^4} &= \sqrt[4 \cdot 3]{a^{3 \cdot 3}} \sqrt[3 \cdot 4]{a^{4 \cdot 4}} = \sqrt[12]{a^9} \sqrt[12]{a^{16}} \\ &= \sqrt[12]{a^9 \cdot a^{16}} = \sqrt[12]{a^{9+16}} = \sqrt[12]{a^{25}} \end{aligned}$$