S 74 Nr 21

a) $2^{\frac{1}{3}} \cdot 4^{\frac{2}{3}} = 2^{\frac{1}{3}} \cdot (2^2)^{\frac{2}{3}} = 2^{\frac{1}{3}} \cdot 2^{\frac{4}{3}} = 2^{\frac{1}{3}+\frac{4}{3}} = \underline{\underline{2^{\frac{5}{3}}}}$

b) $5^{\frac{1}{3}} \cdot 25^{\frac{1}{3}} = 5^{\frac{1}{3}} \cdot (5^2)^{\frac{1}{3}} = 5^{\frac{1}{3}} \cdot 5^{\frac{2}{3}} = 5^{\frac{1}{3}+\frac{2}{3}} = 5^1 = \underline{\underline{5}}$

1 Potenzsatz

c) $\sqrt[3]{2} \cdot \sqrt[3]{4} = 2^{\frac{1}{3}} \cdot 2^{\frac{2}{3}} = 2^{\frac{1}{3}+\frac{2}{3}} = 2^{\frac{3}{3}} = 2^1 = \underline{\underline{2}}$

1 Potenzsatz

d) $3^{\frac{1}{4}} \cdot 9^{\frac{1}{4}} \cdot 3^{\frac{1}{4}} = (3 \cdot 9 \cdot 3)^{\frac{1}{4}} = (3 \cdot 3^2 \cdot 3)^{\frac{1}{4}} = (3^4)^{\frac{1}{4}} = 3^{\frac{4}{4}} = \underline{\underline{3}}$

2 Potenzsatz 3 Potenzsatz

e) $a^{\frac{3}{2}} \cdot a^{\frac{5}{2}} = a^{\frac{3}{2}+\frac{5}{2}} = a^{\frac{8}{2}} = \underline{\underline{a^4}}$

1 PS ≙ 1. Potenzsatz

f) $\sqrt[3]{x^2} \cdot \sqrt[3]{x^4} = x^{\frac{2}{3}} \cdot x^{\frac{4}{3}} = x^{\frac{2}{3}+\frac{4}{3}} = x^{\frac{6}{3}} = \underline{\underline{x^2}}$

1 PS

S 74 Nr. 22

a) $2 \cdot \left(\frac{1}{8}\right)^{\frac{1}{5}} = 2 \cdot \left(\frac{1}{2^3}\right)^{\frac{1}{5}} = 2^1 \cdot 2^{-\frac{3}{5}} = 2^{1-\frac{3}{5}} = \underline{\underline{2^{\frac{2}{5}}}}$

3 PS 1 PS

b) $6 \cdot \left(\frac{7}{36}\right)^{\frac{1}{3}} = 6^{\frac{3}{3}} \cdot \left(\frac{7}{36}\right)^{\frac{1}{3}} = \left(6^3 \cdot \frac{7}{6^2}\right)^{\frac{1}{3}} = \left(6^3 \cdot 6^{-2} \cdot 7\right)^{\frac{1}{3}} = \underline{\underline{6^{\frac{1}{3}} \cdot 7^{\frac{1}{3}}}}$

3 PS + 2 PS 2 PS

c) $x \cdot \left(\frac{x}{y}\right)^{\frac{1}{3}} = x^1 \cdot x^{\frac{1}{3}} \cdot y^{-\frac{1}{3}} = x^{\frac{3}{3}+\frac{1}{3}} \cdot y^{-\frac{1}{3}} = x^{\frac{4}{3}} \cdot y^{-\frac{1}{3}} = \left(\frac{x^4}{y}\right)^{\frac{1}{3}}$

2. PS 1 PS →2 PS

d) $a \cdot b^2 \cdot \left(\frac{4}{a^2 b^3}\right)^{\frac{1}{3}} = (a^3)^{\frac{1}{3}} \cdot (b^{2 \cdot 3})^{\frac{1}{3}} \cdot \left(\frac{4}{a^2 b^3}\right)^{\frac{1}{3}} = \left(\frac{a^3 \cdot b^6 \cdot 4}{a^2 \cdot b^3}\right)^{\frac{1}{3}} = (a \cdot b^3 \cdot 4)^{\frac{1}{3}} =$ 3. PS

$b^{\frac{3}{3}} \cdot a^{\frac{1}{3}} \cdot 4^{\frac{1}{3}} = \underline{\underline{b \cdot (a \cdot 4)^{\frac{1}{3}}}}$

e) $(a+b)\left(\frac{5}{a+b}\right)^{\frac{1}{2}} = \left((a+b)^2\right)^{\frac{1}{2}} \cdot \left(\frac{5}{a+b}\right)^{\frac{1}{2}} = \left(\frac{5\,(a+b)^2}{a+b}\right)^{\frac{1}{2}} =$

$\underline{\underline{(5 \cdot (a+b))^{\frac{1}{2}}}}$