

S. 86 No. 2

Robin Speichermann

a) $5^{\frac{1}{2}} \cdot 5^{\frac{1}{4}} = 5^{\frac{3}{4}} = \sqrt[4]{5^3} \approx 3,34$

b) $4^{\frac{2}{3}} \cdot 4^{\frac{1}{3}} = 4^{\frac{3}{3}} = \sqrt[3]{4} \approx 1,12$

c) $10^{\frac{1}{2}} \cdot 10^{\frac{1}{3}} = 10^{\frac{5}{6}} = \sqrt[6]{10^5} \approx 1,47$

d) $y^{\frac{2}{3}} : y^{\frac{1}{3}} = y$

e) $12^{\frac{1}{2}} \cdot 3^{\frac{1}{2}} = (12 \cdot 3)^{\frac{1}{2}} = \sqrt{36} = 6$

f) $2^{\frac{1}{3}} \cdot 4^{\frac{1}{3}} = (2 \cdot 4)^{\frac{1}{3}} = \sqrt[3]{8} = 2$

g) $3^{\frac{1}{2}} \cdot 8^{\frac{1}{2}} \cdot 6^{\frac{1}{2}} = (3 \cdot 8 \cdot 6)^{\frac{1}{2}} = \sqrt{144} = 12$

h) $(4a)^{\frac{1}{3}} \cdot (16a^2)^{\frac{1}{3}} = (4a \cdot 16a^2)^{\frac{1}{3}} = \sqrt[3]{64a^3} = 4a$

i) $(5^{\frac{2}{3}})^{\frac{1}{4}} = 5^{\frac{2}{12}} = \sqrt[12]{5^2} \approx 1,13$

j) $(4\frac{1}{5})^{\frac{3}{4}} = 4^{\frac{3}{4}} = \sqrt[4]{4^3} \approx 0,81$

k) $(x^{\frac{1}{4}} \cdot y^{\frac{1}{8}})^{\frac{5}{8}} = x^{\frac{5}{32}} \cdot y^{\frac{5}{64}} = \sqrt[32]{x^5} \cdot \sqrt[64]{y^5}$

l) $(x^{\frac{5}{8}} : y^{\frac{5}{8}})^{\frac{1}{4}} = x^{\frac{5}{32}} : y^{\frac{5}{32}} = \sqrt[32]{\frac{x^5}{y^5}}$

S. 86 No. 6

g) $\sqrt[9]{a^{-6}} = a^{-\frac{6}{9}} = a^{-\frac{2}{3}}$

h) $\frac{\sqrt[3]{9} \cdot \sqrt[3]{9}}{\sqrt[3]{9}} = \frac{9^{\frac{1}{3}} \cdot 9^{\frac{1}{3}}}{9^{\frac{1}{3}}} = \frac{9^{\frac{2}{3}}}{9^{\frac{1}{3}}} = 9^{\frac{2}{3} - \frac{1}{3}} = 9^{\frac{1}{3}} = \sqrt[3]{9}$

i) $\sqrt[4]{\frac{2^{\frac{16}{3}}}{2^{\frac{8}{3}}}} = (2^{\frac{16}{3} - \frac{8}{3}})^{\frac{1}{4}} = 2^{\frac{8}{3}} = \sqrt[3]{2^8} = \sqrt[3]{512}$

j) $(\frac{\sqrt[6]{x^4}}{\sqrt[3]{x^2}})^{-2} = \frac{(x^{\frac{4}{6}})^{-2}}{(x^{\frac{2}{3}})^{-2}} = \frac{x^{-\frac{8}{6}}}{x^{-\frac{4}{3}}} = \frac{x^{-\frac{4}{3}}}{x^{-\frac{4}{3}}} = x^{\frac{4}{3}} = \sqrt[3]{x^4}$

k) $\sqrt[3]{r^2} \cdot \sqrt[4]{r^3} = r^{\frac{2}{3}} \cdot r^{\frac{3}{4}} = r^{\frac{8}{12} + \frac{9}{12}} = r^{\frac{17}{12}} = \sqrt[12]{r^{17}}$

l) $(\sqrt[3]{y})^{\frac{1}{4}} \cdot \sqrt[5]{\frac{y}{3}} = (y^{\frac{1}{3}})^{\frac{1}{4}} \cdot y^{\frac{1}{5}} \cdot 3^{-\frac{1}{5}} = y^{\frac{1}{12}} \cdot y^{\frac{2}{5}} \cdot 3^{-\frac{1}{5}} = y^{\frac{5}{12}} \cdot 3^{-\frac{1}{5}} = \sqrt[12]{y^5} \cdot 3^{-\frac{1}{5}}$

S. 87 No. 7

$$\sqrt[4]{x} = 2 \quad |^4$$

$$x = 2^4$$

$$x = 16$$

$$\sqrt[3]{x} = 16 \quad |^3$$

$$x = 16^3$$

$$x = 4096$$

$$\sqrt{x} = 4096 \quad |^2$$

$$x = 4096^2$$

$$x = 16.777.216$$

A: Bei dem Ergebnis 2 und 1 müsste man mit der Zahl 16.777.216 beginnen.

S. 27 No. 8

$$15 \cdot x^2 = 245760 \quad | :15$$

$$x^2 = 16384 \quad | \sqrt{\quad}$$

$$x = 128$$

A: Mit jedem Spiel werden die Punkte des Spielers verdoppelt.