

Handwritten mathematical derivation showing the simplification of a radical expression:

$$\frac{\sqrt[4]{a^3} \cdot \sqrt[4]{a^2}}{\sqrt[4]{a^4}} = \frac{a^{\frac{3}{4}} \cdot a^{\frac{2}{4}}}{a^{\frac{4}{4}}} = \frac{a^{\frac{5}{4}}}{a^1} = a^{\frac{5}{4}-1} = a^{\frac{1}{4}}$$

Below this, there is a calculation: $\frac{18+14-6-10}{10-24} = \frac{-10}{-14} = \frac{5}{7}$

Handwritten mathematical derivation showing the simplification of a radical expression:

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

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Handwritten mathematical derivation showing the simplification of a radical expression:

$$\frac{\sqrt[4]{9^3} \cdot \sqrt[4]{9^3} \cdot \sqrt[4]{9}}{\sqrt[4]{9^3} \cdot \sqrt[4]{9^3}} = \frac{9^{\frac{3}{4}} \cdot 9^{\frac{3}{4}} \cdot 9^{\frac{1}{4}}}{9^{\frac{3}{4}} \cdot 9^{\frac{3}{4}}} = \frac{9^{\frac{3}{4}+\frac{3}{4}+\frac{1}{4}}}{9^{\frac{3}{4}+\frac{3}{4}}} = \frac{9^{\frac{7}{4}}}{9^{\frac{6}{4}}} = 9^{\frac{7}{4}-\frac{6}{4}} = 9^{\frac{1}{4}}$$

Handwritten mathematical derivation showing the simplification of a radical expression:

$$\frac{X^{\frac{1}{6}} \cdot \sqrt[4]{X}}{(X^{\frac{2}{3}})^{\frac{3}{4}} \cdot \sqrt[4]{X}} = \frac{X^{\frac{1}{6}} \cdot X^{\frac{1}{4}}}{X^{\frac{2}{3} \cdot \frac{3}{4}} \cdot X^{\frac{1}{4}}} = \frac{X^{\frac{1}{6}} \cdot X^{\frac{1}{4}}}{X^{\frac{1}{2}} \cdot X^{\frac{1}{4}}} = \frac{X^{\frac{1}{6}+\frac{1}{4}}}{X^{\frac{1}{2}+\frac{1}{4}}} = \frac{X^{\frac{5}{12}}}{X^{\frac{3}{4}}} = X^{\frac{5}{12}-\frac{9}{12}} = X^{-\frac{4}{12}} = X^{-\frac{1}{3}} = \frac{1}{X^{\frac{1}{3}}}$$

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Handwritten mathematical derivation on lined paper:

$$\frac{a^{\frac{1}{2}} \sqrt{a}}{a^{\frac{1}{2}}} = \frac{a^{\frac{1}{2}} \cdot a^{\frac{1}{2}}}{a^{\frac{1}{2}}} = \frac{a^{\frac{1}{2} + \frac{1}{2}}}{a^{\frac{1}{2}}} = \frac{a^1}{a^{\frac{1}{2}}} = a^{\frac{1}{2}} = \sqrt{a}$$

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Handwritten mathematical derivation on lined paper:

$$\frac{\sqrt[3]{a} \cdot a^{\frac{1}{3}}}{a^{\frac{1}{3}} \sqrt[3]{a}} = \frac{(a^{\frac{1}{3}})^{\frac{1}{3}}}{a^{\frac{1}{3}} \cdot a^{\frac{1}{3}}} = \frac{a^{\frac{1}{9}}}{a^{\frac{1}{3} + \frac{1}{3}}} = \frac{a^{\frac{1}{9}}}{a^{\frac{2}{3}}} = a^{\frac{1}{9} - \frac{2}{3}} = a^{-\frac{5}{9}} = \frac{1}{a^{\frac{5}{9}}}$$

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Handwritten mathematical derivation on lined paper:

$$\frac{a^{\frac{1}{2}} \sqrt{a}}{a^{\frac{1}{2}} \sqrt{a}} = \frac{a^{\frac{1}{2}} \cdot a^{\frac{1}{2}}}{a^{\frac{1}{2}} \cdot a^{\frac{1}{2}}} = \frac{a^1}{a^1} = 1$$

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Handwritten mathematical derivation on lined paper:

$$\frac{\sqrt[3]{a}}{a^{\frac{1}{3}}} = \frac{a^{\frac{1}{3}}}{a^{\frac{1}{3}}} = 1$$

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Handwritten mathematical derivation on lined paper. The derivation shows the simplification of a complex fraction involving powers of a and square roots. The steps are as follows:

$$\frac{a^{\frac{1}{2}} \cdot \sqrt{a^{\frac{1}{2}}} \cdot \sqrt{a^{\frac{1}{2}}}}{a^{\frac{1}{2}} \cdot a^{\frac{1}{2}} \cdot \sqrt{a^{\frac{1}{2}}}} = \frac{a^{\frac{1}{2}} \cdot a^{\frac{1}{4}} \cdot a^{\frac{1}{4}}}{a^{\frac{1}{2}} \cdot a^{\frac{1}{2}} \cdot a^{\frac{1}{4}}} = \frac{a^{\frac{1}{2} + \frac{1}{4} + \frac{1}{4}}}{a^{\frac{1}{2} + \frac{1}{2} + \frac{1}{4}}} = \frac{a^{\frac{3}{2}}}{a^{\frac{5}{4}}}$$
$$\frac{a^{\frac{3}{2}}}{a^{\frac{5}{4}}} = a^{\frac{3}{2} - \frac{5}{4}} = a^{\frac{6}{4} - \frac{5}{4}} = a^{\frac{1}{4}}$$

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Handwritten mathematical derivation on lined paper. The derivation shows the simplification of a complex fraction involving powers of a and square roots. The steps are as follows:

$$\frac{a^{\frac{1}{2}} \cdot \sqrt{a^{\frac{1}{2}}} \cdot \sqrt{a^{\frac{1}{2}}}}{a^{\frac{1}{2}} \cdot a^{\frac{1}{2}} \cdot \sqrt{a^{\frac{1}{2}}}} = \frac{a^{\frac{1}{2}} \cdot a^{\frac{1}{4}} \cdot a^{\frac{1}{4}}}{a^{\frac{1}{2}} \cdot a^{\frac{1}{2}} \cdot a^{\frac{1}{4}}} = \frac{a^{\frac{3}{2}}}{a^{\frac{5}{4}}} = a^{\frac{3}{2} - \frac{5}{4}} = a^{\frac{1}{4}}$$

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