

Algebra / Simplifying a higher radical expression: univariate

Worked Examples:

$$\sqrt[4]{162y^9}$$

Handwritten prime factorization tree for 162: 162 is divided by 2 to get 81, which is then divided by 3 three times to get 9, which is then divided by 3 twice to get 1. The prime factors are 2, 3, 3, 3, 3, 3.

$$\sqrt[4]{2 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot y \cdot y \cdot y \cdot y \cdot y}$$

$$3y^2 \sqrt[4]{2y}$$

$$\sqrt[5]{128w^9}$$

Handwritten prime factorization tree for 128: 128 is divided by 2 six times to get 1. The prime factors are 2, 2, 2, 2, 2, 2, 2.

$$\sqrt[5]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot w \cdot w \cdot w \cdot w \cdot w}$$

$$2w \sqrt[5]{4w^4}$$

$$\frac{9}{5} = 1 + \frac{4}{5}$$

$$\sqrt[5]{960^8}$$

Handwritten prime factorization tree for 960: 960 is divided by 2 six times to get 15, which is then divided by 3 to get 5. The prime factors are 2, 2, 2, 2, 2, 2, 3, 5.

$$\sqrt[5]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5}$$

$$20 \sqrt[5]{30^3}$$

#Radicals

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