

November 29, 2017

$$\sqrt[n]{a^m} = a^{\frac{m}{n}}$$

Radical Form \longleftrightarrow Exponential Form

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Examples

* Perfect Roots

$$\sqrt{64} = 8; 8^2 = 64$$

$$\sqrt[3]{512} = 8; 8^3 = 512$$

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$$x^2 - 9 = 0$$

Difference of two squares

$$(x+3)(x-3) = 0$$

* Recall Zero Factor Theorem $ab=0$

- ① $x+3=0$
 $x=-3$
- ② $x-3=0$
 $x=3$

$$x^2 - 9 = 0$$

$$\sqrt{x^2} = \pm\sqrt{9}$$

$$x = \pm 3$$

using Square Root Property to solve.

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$$x^2 - 5 = 0$$

$$\sqrt{x^2} = \pm\sqrt{5}$$

not a Perfect Root

$$x = \pm\sqrt{5}$$

$$\approx \pm 2.23607$$

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Do 8.1 problems

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8.2 - Simplifying Radicals

* Perfect Roots

$$\sqrt{25} = 5$$

$$\sqrt[3]{216} = 6$$

$$\sqrt[4]{81} = 3$$

numeric

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Perfect Roots of Variables

$$\sqrt{x^2} = \sqrt{x \cdot x}$$

↓
one group of 2 x's

$$= x$$

$$\sqrt{x^4} = \sqrt{x \cdot x \cdot x \cdot x}$$

$$= x \cdot x$$

$$= x^2$$

$$\sqrt{x^6} = \sqrt{x \cdot x \cdot x \cdot x \cdot x \cdot x}$$

$$= x^3$$

$\frac{6}{2} = 3$

$$\sqrt{x^{48}} = x^{24}$$

$\frac{48}{2} = 24$

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$$\sqrt[3]{x^3} = \sqrt[3]{x \cdot x \cdot x}$$

$$= x$$

$$\sqrt[3]{x^{36}} = x^{12}$$

$\frac{36}{3} = 12$

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$$\sqrt{50x^3} = \sqrt{50} \cdot \sqrt{x^3}$$

Radicand = $5\sqrt{2} \cdot x\sqrt{x}$

* it's a product
 $50 \cdot x^3 = 5x\sqrt{2x}$

$$\sqrt{50} = \sqrt{25 \cdot 2}$$

$$= \sqrt{25} \cdot \sqrt{2}$$

↓
Perfect Root

$$= 5 \cdot \sqrt{2}$$

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$$\sqrt{x^3} = \sqrt{x \cdot x \cdot x}$$

$$= \sqrt{x \cdot x} \cdot \sqrt{x}$$

$$= x \cdot \sqrt{x}$$

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#1) $\sqrt{125m}$

$$\frac{125}{25} = 5$$

$$\sqrt{25 \cdot 5 \cdot m}$$

$$\sqrt{25} \cdot \sqrt{5} \cdot \sqrt{m}$$

$$5\sqrt{5m}$$

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