

March 11, 2015

Multiplying Radicals

$$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{a \cdot b}$$

Product Rule
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$$\sqrt{2} \cdot \sqrt{3} = \sqrt{2 \cdot 3} = \sqrt{6}$$

$$\sqrt{50} = \sqrt{25 \cdot 2} = \sqrt{25} \cdot \sqrt{2} = 5\sqrt{2}$$

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$$\sqrt[3]{54x^6y^8}$$

$$\sqrt[3]{27 \cdot 2}$$

$$\sqrt[3]{(3)^3 \cdot 2 \cdot (x^2)^3 \cdot (y^2)^3 \cdot y^2}$$

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

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$$2\sqrt[4]{32a^8b^6}$$

$$2\sqrt[4]{16 \cdot 2 \cdot (a^2)^4 \cdot (b^2)^4 \cdot b^2}$$

$$2\sqrt[4]{(2)^4 \cdot 2 \cdot (a^2)^4 \cdot (b^2)^4 \cdot b^2}$$

$4a^2b^2\sqrt[4]{2b^2}$

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Recall

$$\frac{x^3}{x^2} = \frac{\cancel{x} \cdot \cancel{x} \cdot x}{\cancel{x} \cdot \cancel{x}} = x$$

$$= x^{3-2=1} = x$$

$$\frac{x^2}{x^3} = \frac{\cancel{x} \cdot \cancel{x}}{\cancel{x} \cdot \cancel{x} \cdot x} = \frac{1}{x}$$

$$= x^{2-3=-1} = x^{-1}$$

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Negative Exponent Rule

- ① $a^{-n} = \frac{1}{a^n}$
- ② $\frac{1}{a^{-n}} = \frac{a^n}{1} = a^n$

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Quotient Rule

$$\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$$

$$\sqrt[3]{\frac{8}{27}} = \frac{\sqrt[3]{8}}{\sqrt[3]{27}} = \frac{2}{3}$$

$$\sqrt[3]{8} = \sqrt[3]{(2)^3}$$

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$$\frac{3 \sqrt[5]{64x^9y^8}}{\sqrt[5]{x^{-1}y^2}} = 3 \sqrt[5]{\frac{64x^9y^8}{x^{-1}y^2}}$$

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Go 9.2 COR

$$\frac{5\sqrt{2}}{x^2\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \frac{5\sqrt{2x}}{x^3}$$

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

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$$\frac{x^9}{x^{-1}} = x^9 \cdot x^1$$

$$= x^{10}$$

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$$\frac{\sqrt{100x^2}}{\sqrt{2x^3}} = \sqrt{\frac{100x^2}{2x^3}}$$

fractional rule

$$= \sqrt{50x^{-1}}$$

neg exp rule

$$= \sqrt{\frac{50}{x}}$$

fractional rule

$$= \frac{5\sqrt{2}}{\sqrt{x^3}}$$

$$= \frac{5\sqrt{2}}{\sqrt{(x^3)x}}$$

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

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