

March 11, 2015

9.2) *Multiplying Radicals*

* Product Rule

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

** same Index*

$$\sqrt{2} \cdot \sqrt{3} = \sqrt{2 \cdot 3}$$

$$= \sqrt{6}$$

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

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

$$= 5\sqrt{2}$$

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

$$\sqrt[3]{27 \cdot 2 \cdot (x^2)^3 \cdot (y^2)^3 \cdot y^2}$$

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

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

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

$$2\sqrt[4]{(2^4) \cdot 2 \cdot (a^2)^4 \cdot (b^1)^4 \cdot b^2}$$

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

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

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$$3\sqrt[5]{64x^9y^8}$$

$$3\sqrt[5]{(2)^5 \cdot 2 \cdot (x)^5 \cdot x^4 \cdot (y)^5 \cdot y^3}$$

$$6xy \sqrt[5]{2x^4y^3}$$

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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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$$\frac{1}{a^{-1}} = \frac{1}{\frac{1}{a}} = \frac{\frac{1}{1} \cdot a}{\frac{1}{1} \cdot 1} = \frac{a}{1} = a$$

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Negative Exponent Rule

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

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

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Quotient Rule

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

* Same Index

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Quotient Rule

$$\frac{\sqrt{100x^5}}{\sqrt{2x^7}} = \sqrt{\frac{100x^5}{2x^7}}$$

$$= \sqrt{50x^{-2}}$$

$$= \sqrt{25 \cdot 2 \cdot x^{-2}}$$

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

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

neg. exp. rule

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

Quotient Rule

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

$$\frac{5}{1} \frac{\sqrt{2}}{x^2}$$

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

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Now Do 9.2 COA

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