June 17, 2015

8.3 #15) $x\sqrt{9xy^2} + 4\sqrt{x^3y^2}$

$3xy\sqrt{x} + 4xy\sqrt{x}$

$7xy\sqrt{x}$

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Conjugate Pairs

$(a+b)(a-b)$ F O I L

$a^2 - ab + ab - b^2$

$a^2 - b^2$ ← Difference of Two Squares

$16x^2 - 49$ $a = 4x$, $b = 7$

$a^2 - b^2$

$(4x+7)(4x-7)$

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$16x^2 - 5$

a^2 b^2

$a = 4x$ $b = ? = \sqrt{5}$

$(4x+\sqrt{5})(4x-\sqrt{5})$ F O I L

$\sqrt{5}\cdot\sqrt{5} = \sqrt{5\cdot5} = \sqrt{25} = 5$

$16x^2 - 4x\sqrt{5} + 4x\sqrt{5} - 5$

O I

$16x^2 - 5$

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$x^2 - 2$

$(x+\sqrt{2})(x-\sqrt{2})$

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8.4 #50)

$(\sqrt{a}-1)(a-\sqrt{a}+1)$

$\sqrt{a}(a) - \sqrt{a}(\sqrt{a}) + \sqrt{a}(1) - 1(a)$

$-(-1)(\sqrt{a}) + (-1)(1)$

$a\sqrt{a} - a + \sqrt{a} \quad -a + \sqrt{a} - 1$

$a\sqrt{a} - 2a + 2\sqrt{a} - 1$

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8.4 #59) FOIL

$(\sqrt[4]{2x}-1)(\sqrt[4]{8x^3}-2)$ F O I L

$\sqrt[4]{16x^4} - 2\sqrt[4]{2x} - \sqrt[4]{8x^3} + 2$

F O I L

$2x - 2\sqrt[4]{2x} - \sqrt[4]{8x^3} + 2$

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* Quiz #5 – 8.3 addition
* Working on 8.4 m3

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8.5 Division of Radicals

* A key Practice: not leaving radical in the denominator.

"Rationalizing the Denominator"

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$\frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{\sqrt{9}} = \frac{2\sqrt{3}}{3}$

"a one"

Rationalize this!

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$\frac{4x}{\sqrt{8}} = \frac{4x}{2\sqrt{2}} = \frac{2x}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2x\sqrt{2}}{2} = x\sqrt{2}$

or

$\frac{4x}{\sqrt{8}} \cdot \frac{\sqrt{8}}{\sqrt{8}} = \frac{4x\sqrt{8}}{8} = \frac{x\sqrt{8}}{2} = \frac{2x\sqrt{2}}{2} = x\sqrt{2}$

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$\frac{a}{3\sqrt{b}} \cdot \frac{\sqrt{b}}{\sqrt{b}} = \frac{a\sqrt{b}}{3b}$

only thing needing to be Rationized

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$\frac{xy}{2\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \frac{xy\sqrt{x}}{2x}$

$= \frac{x \cdot y \cdot \sqrt{x}}{x \cdot 2} = \frac{y\sqrt{x}}{2}$

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Quotient Rule

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

$$\sqrt[3]{\frac{a}{27}} = \frac{\sqrt[3]{a}}{\sqrt[3]{27}} = \frac{\sqrt[3]{a}}{3}$$

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$$\sqrt{\frac{4}{x}} = \frac{\sqrt{4}}{\sqrt{x}} = \frac{2}{\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \frac{2\sqrt{x}}{x}$$

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$$\sqrt[3]{\frac{125}{8}} = \frac{\sqrt[3]{125}}{\sqrt[3]{8}} = \frac{5}{2}$$

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$$\sqrt[3]{\frac{6y}{64}} + \frac{3\sqrt[3]{6y}}{1}$$

$$\frac{\sqrt[3]{6y}}{\sqrt[3]{64}} + \frac{3\sqrt[3]{6y}}{1}$$

$$\frac{\sqrt[3]{6y}}{4} + \frac{3\sqrt[3]{6y}}{1} = \frac{\sqrt[3]{6y} + 12\sqrt[3]{6y}}{4}$$

$$= \frac{13\sqrt[3]{6y}}{4}$$

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