2.3 adding and subtracting radicals

Tuesday, October 20, 2015 9:46 AM

Pre-Calculus 11 2.3 Name_____ _____

Adding and Subtracting Radical Expressions Blk_____

Notes

The same strategies for simplifying polynomials can be used for radicals. Like terms or like radicals must have the same radicand and the same index.

For instance:

$x + 2y + 3x$ 'like terms'

$= 4x + 2y$

same as $2\sqrt{3} + 3\sqrt{2} + 5\sqrt{3}$ $7\sqrt{3} + 3\sqrt{2}$

Example1: Simplify

a) $8\sqrt{7} - 2\sqrt{7}$

$= 6\sqrt{7}$

b) $\sqrt[3]{24} - \sqrt[3]{192} - \sqrt[3]{375}$

$= \sqrt[3]{8 \cdot 3} - \sqrt[3]{64 \cdot 3} - \sqrt[3]{125 \cdot 3}$

$= 2\sqrt[3]{3} - 4\sqrt[3]{3} - 5\sqrt[3]{3}$

$= -7\sqrt[3]{3}$

c) $\sqrt{63} + \sqrt{40} - \sqrt{90} - \sqrt{28}$ you try

$\sqrt{9 \cdot 7} + \sqrt{4 \cdot 10} - \sqrt{9 \cdot 10} - \sqrt{4 \cdot 7}$

$= 3\sqrt{7} + 2\sqrt{10} - 3\sqrt{10} - 2\sqrt{7}$

$= \sqrt{7} - \sqrt{10}$

Example 2: Identify the values of the variables for which each radical is defined, then simplify

a) $6\sqrt{a} + 5\sqrt{a} - 11\sqrt{a}$ $a \geq 0$

$11\sqrt{a} - 11\sqrt{a}$

$= 0$

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Notes

b) $\sqrt{50a^2b} - \sqrt{8a^2b}$

$a^2 \geq 0$ $\sqrt{a^2} = |a|$

$= \sqrt{25 \cdot 2 \cdot a^2 b} - \sqrt{4 \cdot 2 a^2 b}$

$= 5|a|\sqrt{2b} - 2|a|\sqrt{2b}$

$= 3|a|\sqrt{2b}$

$a, b \in \mathbb{R}$, $b \geq 0$

c) $\sqrt[3]{27p^3q} + 8\sqrt[3]{p^3q}$ Try C

$= 3p\sqrt[3]{q} + 8p\sqrt[3]{q}$

$= 11p\sqrt[3]{q}$

$p, q \in \mathbb{R}$

Example 3: Simplify

a) $7\sqrt{m} + 2\sqrt{n} + 5\sqrt{n} - 3\sqrt{m}$, $nm \geq 0$

$4\sqrt{m} + 7\sqrt{n}$

b) $3\sqrt{32a^5} - 2\sqrt{45b^3} + 5b\sqrt{125b} - 2a\sqrt{72a^3}$ $a, b \geq 0$ YOU DO

(cont. 2.8)

Assignment: quiz 2.1-2.2 [redacted] → Next week Wednesday (2.1/2.2)

HW: DO all questions 2.3 WB