TOPIC: ADDING AND SUBTRACTING RADICALS

Adding & Subtracting LIKE Radicals

◆ Just how we combined ***like terms***, combine _____ (same ***radicand***, same ***index***).

Algebraic Expressions	Radical Expressions
$2x + 3 + 4x + 8$ $(2x + 4x) + (3 + 8)$ $6x + 11$	$(2\sqrt{x} + 3) + (4\sqrt{x} + 8)$

EXAMPLE: Perform the indicated operation and simplify. Assume all variables are positive.

(A) $3\sqrt{7} + 2\sqrt{7} - \sqrt[3]{7}$

(B) $9\sqrt[3]{x} - \sqrt{x} - 5\sqrt[3]{x} + 3$

Warning!

$\sqrt[m]{a} + \sqrt[m]{b} \neq \sqrt[m]{a+b}$

PRACTICE True or False: $\sqrt{9+16}$ and $\sqrt{9} + \sqrt{16}$ are equal.

PRACTICE Add or subtract as indicated and simplify.

(A) $2\sqrt{5} + 6\sqrt{5}$

(B) $6\sqrt[4]{3y} + 2\sqrt[4]{3y} - 5\sqrt[4]{3y}$

(C) $\sqrt[3]{50} + \sqrt[3]{8} - \sqrt[3]{18}$

TOPIC: ADDING AND SUBTRACTING RADICALS

Adding & Subtracting Unlike Radicals

◆ When adding/subtracting radicands that are NOT alike, you'll have to _____ them *first* before combining!

Combining LIKE Radicals	Combining UNLIKE Radicals
$3\sqrt{5} + 4\sqrt{5}$	$\sqrt{5} + \sqrt{20}$

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

EXAMPLE: Add or subtract the expressions and simplify.

(A) $5\sqrt{2} - \sqrt{18}$

(B) $\sqrt{18} + \sqrt{50}$

PERFECT POWERS	
Squares	**Cubes**
$2^2 = 4$	$2^3 = 8$
$3^2 = 9$	$3^3 = 27$
$4^2 = 16$	$4^3 = 64$
$5^2 = 25$	$5^3 = 125$
$6^2 = 36$	
$7^2 = 49$	
$8^2 = 64$	
$9^2 = 81$	
$10^2 = 100$	

PRACTICE Add or subtract as indicated and simplify.

$\sqrt{12} + \sqrt{20} - \sqrt{45}$

EXAMPLE Add or subtract as indicated and simplify.

(A) $\sqrt{50} + \sqrt[3]{125} - \sqrt[4]{81}$

(B) $\sqrt{32x} + \sqrt[3]{8x^3} - \sqrt[4]{16x^4}$