

2.3 Adding, Subtracting Then Simplifying Square Roots

1. ADDING RADICALS (also Subtracting)

ONLY IF INDEX (square root, cube root) and Radicand are Same.

ex. $2\sqrt{2} + 3\sqrt{2}$ index 2
Radicand 2 Match
 2 "Square root of 2" + 3 "Square root of 2"

Just add part before $5\sqrt{2}$
 "5 square root of 2"

"Square Root of 2" just follows

NOT ~~$5\sqrt{4}$~~ dont Add Radicands

2 bananas + 3 bananas = 5 bananas
 "Square root of 2" "Square root of 2" = bananas

ex 2. $12\sqrt{7} - 3\sqrt{7} = 9\sqrt{7}$

2. If You Can't add, just leave it

ex $3\sqrt{5} + 2\sqrt{7} = 3\sqrt{5} + 2\sqrt{7}$
 = already Simplified

3. Radical Terms have to be simplified before you can add or subtract.

ex 1 $2\sqrt{25} + \sqrt{36}$ Simplify first! - you might be able to add!

$2 \cdot 5 + 6$ $10 + 6 = 16!$

ex 2 $2\sqrt{72} - 3\sqrt{2}$

Not Simplified! $\begin{matrix} \cancel{2} & 36 \\ \cancel{2} & 18 \\ \cancel{2} & 9 \\ \cancel{3} & 3 \\ \cancel{3} & 1 \end{matrix}$ $2 \cdot 2 \cdot 3 \sqrt{2}$ so

$12\sqrt{2} - 3\sqrt{2} = 9\sqrt{2}$

4. You try some with me:

$$1. 4\sqrt{8} + 2\sqrt{2}$$

$$\begin{array}{l} 2 \cdot 2 \\ 4 \cdot 2\sqrt{2} + 2\sqrt{2} \\ 8\sqrt{2} + 2\sqrt{2} \\ \hline 10\sqrt{2} \end{array}$$

$$2. 3\sqrt{20} - 4\sqrt{45}$$

$$\begin{array}{l} 3 \cdot 2 \cdot 5 - 4 \cdot 3 \cdot 5 \\ 6\sqrt{5} - 12\sqrt{5} = -6\sqrt{5} \end{array}$$

$$3. \sqrt{36} + \sqrt{100}$$
$$\begin{array}{l} 6 + 10 \\ \hline 16 \end{array}$$

$$4. \sqrt{75} + \sqrt{108}$$

$$\begin{array}{l} 3 \cdot 25 + 2 \cdot 54 \\ 5 \cdot 5 + 2 \cdot 27 \\ 5 \cdot 1 + 3 \cdot 3 \\ 5\sqrt{3} + 6\sqrt{3} = 11\sqrt{3} \end{array}$$

$$\begin{array}{l} 2 \cdot 10 \\ 2 \cdot 5 \\ \hline 5 \end{array}$$

$$* 5 \quad 5\sqrt{8} + 3\sqrt{20} - \sqrt{32}$$
$$\begin{array}{l} \wedge \quad 3 \cdot 2 \cdot 5 \\ 10\sqrt{2} + 6\sqrt{5} - 4\sqrt{2} \\ \hline 6\sqrt{2} + 6\sqrt{5} \end{array}$$

6. A Rectangle is $5\sqrt{7} + 2\sqrt{3}$ m long, & $6\sqrt{7} - 3\sqrt{3}$ meters wide.

In HW \blacktriangleright

What is the perimeter

$$5\sqrt{7} + 2\sqrt{3} + 5\sqrt{7} + 2\sqrt{3} + 6\sqrt{7} - 3\sqrt{3} + 6\sqrt{7} - 3\sqrt{3}$$
$$10\sqrt{7} + 4\sqrt{3} + 12\sqrt{7} - 6\sqrt{3}$$

$$22\sqrt{7} - 2\sqrt{3}$$

Class work & HW