Learning Goals
1. How do we simplify radical expressions?
2. How do we add and subtract radical expressions?

Warm-up
Directions: Use your VIDEO NOTES from last night to simplify each of the following expressions completely. Recall from the video:
1. Make a prime factorization tree for the radicand
2. Circle groups based on the index
3. For every group circled, pull out that number. Anything not circled, stays on the inside of the radical
   a. If there is a term to the outside of the radical, you must multiply this by what you pull out of the radical.

a) \(5\sqrt{200xy^2}\)

b) \(\sqrt[4]{80c^5}\)

c) Which expression results in a rational number?
   1) \(\sqrt{2} + 3\sqrt{3}\)
   2) \(3\sqrt{3} + \sqrt{16}\)
   3) \(\sqrt{16} + \sqrt{9}\)
   4) \(\sqrt{9} + \sqrt{2}\)
Distribution Property with Radicals

Does $\sqrt{9} + 16 = \sqrt{9} + \sqrt{16}$? Try it!

Based on the above, simplifying the following:
$\sqrt{30x^4} + 34x^4$

Adding and Subtracting Radicals

You can add/subtract radicals if:
- The indices are the same
- The radicands are the same
- The terms outside of the radical are “like” terms

Class Examples

1) Simplify: $2a\sqrt{125a^2b} - a^2\sqrt{80b} + 4\sqrt{20a^4b}$

2) Simplify: $\sqrt[3]{243x^4} - 2x\sqrt[3]{8x}$
Express each of the following in simplest radical form.

3) \(-2a\sqrt{12ab^2} + 3b\sqrt{3a^3} - 2\sqrt{48a^3b^2}\)

4) \(xy\sqrt{48x^5y^2} + 5x^2y - x^2 \sqrt{243xy^6} + 4\sqrt{16x^8y^4}\)

5) \(3x^4 \frac{3}{2} \sqrt{2^6x^4} - 2x^3 \frac{1}{3} \sqrt{3^3 x^4}\)
Think - Pair - Share

In the given multiple-choice question, choose the best answer WITHOUT solving the problem. Explain how you can figure out the answer without doing the question.

The expression $4ab \sqrt{2b} - 3a \sqrt[3]{18b^3} + 7ab \sqrt{6b}$ is equivalent to

(1) $2ab \sqrt{6b}$
(2) $16ab \sqrt{2b}$
(3) $-5ab + 7ab \sqrt{6b}$
(4) $-5ab \sqrt{2b} + 7ab \sqrt{6b}$