

Section 5.5 – Operations with Radical Expressions

I can simplify nth root problems using the product property.

I can rationalize the denominator of a fraction by getting rid of the radical.

I can multiply and divide radicals

I can add and subtract radicals

I can add and subtract radicals

Step 1

Step 2:

Add the radical expressions.

$$4\sqrt{12} + 3\sqrt{20} + \sqrt{75}$$

Simplify each radical.

Combine like terms.

1. $6\sqrt{20} + 8\sqrt{5} - 5\sqrt{45}$

2. $5\sqrt{18} + 8\sqrt{108} - 3\sqrt{32}$

You try ☺

3. $\sqrt{243} + 2\sqrt{24} - 3\sqrt{54}$

4. $2\sqrt{48} - 4\sqrt{75} + \sqrt{28}$

I can simplify nth root problems using the product property.

Step 1: Multiply the radical expressions:

Rules for Multiplying Radical Expressions

Step 2: Simplify the radicals.

5. $(3\sqrt{15})(-4\sqrt{45})$

6. $(2\sqrt{24})(7\sqrt{18})$

7. $(6\sqrt{3ab})(4\sqrt{24ab^3})$

You try ☺

8. $(-2\sqrt{20})(5\sqrt{40})$

9. $(3\sqrt{8})(2\sqrt{98})$

I can multiply and divide radicals

10. $(3 - \sqrt{2})(4 + \sqrt{3})$

11. $(\sqrt{2} + \sqrt{10})(\sqrt{2} - \sqrt{10})$

12. $(3\sqrt{2} + 2\sqrt{3})^2$

You try ☺

13. $(\sqrt{5} - \sqrt{2})(\sqrt{5} + \sqrt{2})$

14. $(2\sqrt{3} - \sqrt{5})^2$

Rules for Dividing Radical Expressions:

Rationalizing the denominator:

I can rationalize the denominator of a fraction by getting rid of the radical.

15. $\sqrt{\frac{75}{18}}$

16. $\sqrt{\frac{9a^5}{64b^4}}$

17. $\sqrt[3]{\frac{27}{4}}$

18. $\sqrt{\frac{5b^3}{3a}}$

19. $\frac{6}{\sqrt{2}-1}$

20. $\frac{5+\sqrt{3}}{4+\sqrt{3}}$

You try ☺

21. $\sqrt{\frac{25x^4}{2y}}$

22. $\frac{5}{\sqrt{3}-2}$