

Simplifying Radical Expressions

Evaluate the following:

1. $1000^{2/3}$

2. $49^{-1/2}$

3. $\left(\frac{4}{9}\right)^{-1/2}$

4. $(-216)^{-1/3}$

Simplify the following:

5. $\sqrt[5]{z^{11}}$

6. $\sqrt[3]{27a^3b^5}$

7. $\sqrt[5]{243x^{11}y^8z^{20}}$

8. $\sqrt{300} - 2\sqrt{75} + \sqrt{12}$

9. $(3\sqrt{5} - 1)(7\sqrt{5} + 2)$

10. $5\sqrt{18a^5} - 7\sqrt{32a^5} + 4\sqrt{50a^5}$

Rationalize the denominator:

11. $\frac{4}{\sqrt{7}}$

12. $\frac{2}{\sqrt{x} + 4}$

13. $\frac{\sqrt{10} + \sqrt{2}}{\sqrt{10} - \sqrt{2}}$

14. Challenge Question: Find the exact value of $x^2 - 6x + 1$ if $x = 3 - \sqrt{10}$