

Simplify the radical expression. Assume that all variables represent nonnegative values.

1. $\sqrt[4]{256}$

2. $\sqrt{x^4 y^8 z^{32}}$

3. $\sqrt[3]{750}$

4. $\sqrt{180x^{25}y^{21}}$

5. $\sqrt[5]{x^{80}y^{40}z^{11}}$

6. Approximate $\sqrt{326}$ to the nearest thousandth, using a calculator.

7. For $f(x) = \sqrt{x^2 + 4x - 22}$, find $f(-10)$. Round to the nearest thousandth.

8. Find the domain of $f(x) = \sqrt{4x + 3} - 9$. Express your answer in interval notation.

Add or subtract.

9. $(4\sqrt{5} - 3\sqrt{14}) - (8\sqrt{14} - 16\sqrt{5})$

10. $6\sqrt{8} - 13\sqrt{18} + 9\sqrt{200}$

Multiply.

11. $12\sqrt{15}(7\sqrt{3} - 11\sqrt{5})$

12. $(5\sqrt{3} + \sqrt{2})(6\sqrt{2} - 11\sqrt{3})$

Rationalize the denominator and simplify.

13. $\frac{ab^6}{\sqrt{a^5b^4c^7}}$

14. $\frac{4\sqrt{10}}{3\sqrt{11} + 2\sqrt{5}}$

Solve.

15. $\sqrt{7x + 13} + 19 = 11$

16. $\sqrt{3x + 13} - 3 = x$

17. For the function $f(x) = \sqrt{x^2 + 8x + 40} - 3$, find all values x for which $f(x) = 2$.

18. A pendulum has a length of 3 feet. Find its period, rounded to the nearest hundredth of a second. Use the formula $T = 2\pi\sqrt{\frac{L}{32}}$

19. Express $\sqrt{-126}$ in terms of i .

Add or subtract the complex numbers.

20. $(1 + 6i) + (5 - 12i)$

21. $(-9 + 2i) - (5 + 6i) - (10 - 20i)$

Multiply.

22. $(5 - 2i)(8 - 10i)$

23. $(10 + 3i)^2$

Rationalize the denominator.

24. $\frac{6i}{9 + 5i}$

25. $\frac{3 + 10i}{5i}$

26. Simplify i^{65} .