

Practice 7-1

Roots and Radical Expressions

Find each real-number root.

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|-----------------------|-------------------|--------------------|----------------------|
| 1. $\sqrt{144}$ | 2. $-\sqrt{25}$ | 3. $\sqrt{-0.01}$ | 4. $\sqrt[3]{0.001}$ |
| 5. $\sqrt[4]{0.0081}$ | 6. $\sqrt[3]{27}$ | 7. $\sqrt[3]{-27}$ | 8. $\sqrt{0.09}$ |

Find all the real cube roots of each number.

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| 9. 216 | 10. -343 | 11. -0.064 | 12. $\frac{1000}{27}$ |
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Find all the real square roots of each number.

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| 13. 400 | 14. -196 | 15. 10,000 | 16. 0.0625 |
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Find all the real fourth roots of each number.

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| 17. -81 | 18. 256 | 19. 0.0001 | 20. 625 |
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Simplify each radical expression. Use absolute value symbols when needed.

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|------------------------------|-------------------------|------------------------|-----------------------------------|
| 21. $\sqrt{81x^4}$ | 22. $\sqrt{121y^{10}}$ | 23. $\sqrt[3]{8g^6}$ | 24. $\sqrt[3]{125x^9}$ |
| 25. $\sqrt[5]{243x^5y^{15}}$ | 26. $\sqrt[3]{(x-9)^3}$ | 27. $\sqrt{25(x+2)^4}$ | 28. $\sqrt[3]{\frac{64x^9}{343}}$ |

Find the two real-number solutions of each equation.

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| 29. $x^2 = 4$ | 30. $x^4 = 81$ | 31. $x^2 = 0.16$ | 32. $x^2 = \frac{16}{49}$ |
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33. A cube has volume $V = s^3$, where s is the length of a side. Find the side length for a cube with volume 8000 cm^3 .

34. The velocity of a falling object can be found using the formula $v^2 = 64h$, where v is the velocity (in feet per second) and h is the distance the object has already fallen.

- What is the velocity of the object after a 10-foot fall?
- How much does the velocity increase if the object falls 20 feet rather than 10 feet?