

**Chapter 9**  
**Form C**

For problems 1 – 3, find the indicated root, or state that the expression is not a real number.

1.  $\sqrt{256}$  1. \_\_\_\_\_

2.  $\sqrt{-25}$  2. \_\_\_\_\_

3.  $\sqrt[3]{-27}$  3. \_\_\_\_\_

For problems 4 – 6, simplify by first writing the expression in radical form.

4.  $100^{\frac{1}{2}}$  4. \_\_\_\_\_

5.  $81^{\frac{5}{4}}$  5. \_\_\_\_\_

6.  $(-8)^{-\frac{5}{3}}$  6. \_\_\_\_\_

For problems 7 – 9, simplify each expression.

7.  $15\sqrt{108}$  7. \_\_\_\_\_

8.  $\sqrt[4]{32x^{13}}$  8. \_\_\_\_\_

9.  $\sqrt[3]{108x^{16}}$  9. \_\_\_\_\_

For problems 10 – 19, perform the indicated operation and, if possible, simplify.

10.  $\sqrt{12x} \cdot \sqrt{4x^2}$  10. \_\_\_\_\_

11.  $\sqrt[3]{49} \cdot \sqrt[3]{14}$  11. \_\_\_\_\_

12.  $\sqrt{\frac{5}{8}} \cdot \sqrt{\frac{15}{8}}$  12. \_\_\_\_\_

13.  $\frac{\sqrt{540x^5}}{\sqrt{5x^2}}$  13. \_\_\_\_\_

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14.  $\sqrt{3x^4} \cdot \sqrt{54x^5}$  14. \_\_\_\_\_

15.  $12\sqrt{40} + 3\sqrt{160} - 10\sqrt{90}$  15. \_\_\_\_\_

16.  $\sqrt{6}(4\sqrt{2} + 5\sqrt{6})$  16. \_\_\_\_\_

17.  $(7 + 8\sqrt{3})(3 - 5\sqrt{3})$  17. \_\_\_\_\_

18.  $(9 + 2\sqrt{5})(9 - 2\sqrt{5})$  18. \_\_\_\_\_

19.  $(4 - 2\sqrt{5})^2$  19. \_\_\_\_\_

For problems 20 – 21, rationalize each denominator and, if possible simplify.

20.  $\sqrt{\frac{18}{y}}$  20. \_\_\_\_\_

21.  $\frac{8}{\sqrt{3} + 1}$  21. \_\_\_\_\_

For problems 22 – 24, solve each radical equation. If the equation has no solution, so state.

22.  $\sqrt{2x-3} - 7 = 2$  22. \_\_\_\_\_

23.  $\sqrt{5-4x} = x$  23. \_\_\_\_\_

24.  $\sqrt{x-1} = x-1$  24. \_\_\_\_\_

25. The formula  $v = \left(\frac{P}{0.015}\right)^{\frac{1}{3}}$  models the wind speed,  $v$ , 25. \_\_\_\_\_

in miles per hour, needed to produce  $P$  watts of power from a windmill. How fast must the wind be blowing to produce 75 watts of power? Round your answer to the nearest integer.