

EXAMPLE 7 The area of a circle is given by π times the square of its radius.

- Choose a variable to represent the radius of a circle and write an algebraic expression for the area.
- Using the approximation 3.14 for π , find the area of a circle of radius 5 centimeters.

Solutions

- Let r stand for the radius of the circle. Then the area is given by πr^2 .
- If $r = 5$ centimeters, the area of the circle is approximately

$$\begin{aligned}\pi r^2 &= (3.14)(5)^2 \\ &= (3.14)(25) = 78.5 \text{ square centimeters.}\end{aligned}$$

EXERCISE 1.1

A

■ Name the subsets of the real numbers to which each of the following numbers belongs. See Example 1.

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|------------------------|--------------------------|-----------------|-----------------------|
| 1. $-\frac{5}{8}$ | 2. 137 | 3. $\sqrt{8}$ | 4. 2.71828... |
| 5. -36 | 6. $\sqrt{49}$ | 7. 0 | 8. $0.\overline{357}$ |
| 9. $13.\overline{289}$ | 10. $\sqrt{\frac{4}{9}}$ | 11. 6.468725... | 12. $\frac{13}{7}$ |

■ Simplify. See Example 2.

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|------------|--------------|--------------|
| 13. -5^2 | 14. $(-5)^2$ | 15. $(-3)^4$ |
| 16. -3^4 | 17. -4^3 | 18. $(-4)^3$ |

■ Simplify. See Example 3.

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|---|--|
| 19. $\frac{3(6-8)}{-2} - \frac{6}{-2}$ | 20. $\frac{5(3-5)}{2} - \frac{18}{-3}$ |
| 21. $6[3 - 2(4 + 1)]$ | 22. $5[3 + 4(6 - 4)]$ |
| 23. $(4 - 3)[2 + 3(2 - 1)]$ | 24. $(8 - 6)[5 + 7(2 - 3)]$ |
| 25. $64 \div (8[4 - 2(3 + 1)])$ | 26. $27 \div (3[9 - 3(4 - 2)])$ |
| 27. $5[3 + (8 - 1)] \div (-25)$ | 28. $-3[-2 + (6 - 1)] \div (-9)$ |
| 29. $[-3(8 - 2) + 3] \cdot [24 \div 6]$ | 30. $[-2 + 3(5 - 8)] \cdot [-15 \div 3]$ |