CHAPTER 14 **Test**

1. Name two examples of each of the following.
   a. integer $-4, 4$
   b. irrational number $2.13133133313333\ldots$
   c. rational number 0.4 $\frac{1}{7}$

2. Write a pair of conjugates.
   $3+\sqrt{4}$ $3-\sqrt{4}$

Name the set or sets of numbers to which each real number belongs.
Let N = natural numbers, W = whole numbers, Z = integers,
Q = rational numbers, and I = irrational numbers.

3. $\frac{5}{3}$ Q

4. 0 W, Z, Q

5. $-0.45275563\ldots$ I

6. $-\sqrt{81}$ Z, Q

7. Graph $\sqrt{5}$, $-\sqrt{3}$, and 4.5 on a number line.
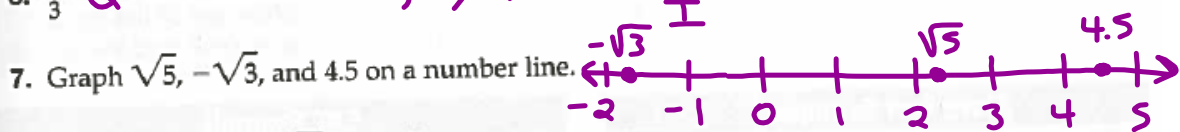
8. Write 3.22, −3.22, $\sqrt{11}$, and $3.\overline{2}$ in order from least to greatest.
   $-3.22, \ 3.22, \ 3.\overline{2}, \ \sqrt{11}$

Find the distance between each pair of points. Round to the nearest
tenth, when necessary.

9. $G(7, 4)$, $H(-2, 4)$
   9

10. $X(3, -3)$, $Y(-9, 2)$
    13

11. $M(1, -1)$, $N(-5, 1)$
    $\sqrt{40} \approx 6.3$

12. Suppose $A(5, m)$ and $B(8, 1)$ are 5 units apart. What is the value of m?
    5 or −3

Simplify each expression. Leave in radical form.

13. $\sqrt{80} = 4\sqrt{5}$

14. $\sqrt{3} \cdot \sqrt{27} = 9$

15. $4\sqrt{3} \cdot \sqrt{6} = 12\sqrt{2}$

16. $\dfrac{\sqrt{96}}{\sqrt{8}} = 2\sqrt{3}$

17. $\dfrac{\sqrt{7}}{\sqrt{11}} = \dfrac{\sqrt{77}}{11}$

18. $\dfrac{7}{7+\sqrt{5}} = \dfrac{49-7\sqrt{5}}{44}$

19. $-4\sqrt{7} + 6\sqrt{7} - 12\sqrt{7}$
    $-10\sqrt{7}$

20. $5\sqrt{18} - 2\sqrt{50}$
    $5\sqrt{2}$

Simplify each expression. Use absolute value symbols if necessary.

21. $\sqrt{25a^3b^2} = 5A|b|\sqrt{A}$

22. $\sqrt{56m^4np} = 2m^2\sqrt{14np}$

Solve each equation. Check your solution.

23. $\sqrt{b} + 8 = 5$
    $\emptyset$ no solution

24. $\sqrt{4x - 3} = 6 - x$
    $x = 3$

25. **Science** The distance d in miles a person can see on any planet is
    given by the formula $d = \sqrt{\dfrac{rh}{2640}}$, where r is the radius of the planet in
    miles and h is the height of the person in feet. Suppose a person 6 feet
    tall is standing on Mars. If the radius of the planet is 2109 miles, how far
    can the person see? Round to the nearest tenth.
    $d \approx 2.2$ miles

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