

Practice 1-5

Absolute Value Equations and Inequalities

Write each specification as an absolute value inequality.

1. $6.3 \leq h \leq 10.3$

2. $-2.5 \leq a \leq 2.5$

3. $22 \leq x \leq 33$

Solve each inequality. Graph the solutions.

4. $|x + 5| > 12$

5. $|k - 3| \leq 19$

6. $|x + 2| \geq 0$

7. $2|t - 5| < 14$

8. $|3x - 2| + 7 \geq 11$

9. $5|2b + 1| - 3 \leq 7$

10. $|2 - 3w| \geq 4$

11. $-3|7m - 8| < 5$

12. $|2u| > 6$

Solve each equation. Check for extraneous solutions.

13. $|4x| = 28$

14. $|3x + 6| = -12$

15. $|z - 1| = 7z - 13$

16. $|s + 12| = 15$

17. $|-3x| = 63$

18. $2|5x + 3| = 16$

19. $|6x + 7| = 5x + 2$

20. $|7r - 4| = 24$

21. $|3c| + 2 = 11$

22. $5|x + 1| + 6 = 21$

23. $|3x + 5| - 2x = 3x + 4$

24. $-|d + 2| = 7$

Write an absolute value inequality and a compound inequality for each length x with the given tolerance.

25. a length of 4.2 cm with a tolerance of 0.01 cm

26. a length of 3.5 m with a tolerance of 0.2 cm

27. a length of 10 ft with a tolerance of 1 in.

28. Write an absolute value inequality and a compound inequality for the temperature T that was recorded to be as low as 65°F and as high as 87°F on a certain day.

29. The weight of a 40-lb bag of fertilizer varies as much as 4 oz from the stated weight. Write an absolute value inequality and a compound inequality for the weight w of a bag of fertilizer.

30. The duration of a telephone call to a software company's help desk is at least 2.5 minutes and at most 25 minutes. Write an absolute value inequality and a compound inequality for the duration d of a telephone call.