



EXERCISE 1.3

In exercises 1-12, simplify the numerical expression.

1. $|-4| + |7|$

2. $|5| + |-6|$

3. $-|-5|$

4. $-|6|$

5. $||-5||$

6. $-|-6|$

7. $|-4| + |-7|$

8. $||-6||$

9. $||4| - |-7||$

10. $||5| - |-6||$

11. $||-5| - |2||$

12. $||-3| - |-7||$

In exercises 13-22, simplify the numerical expression, and find the additive inverse of the simplified number.

13. -3

14. $-3 + 5$

15. $-\frac{1}{2} + \frac{1}{3}$

16. $\frac{2}{3} - \frac{4}{5}$

17. $|-5| + |7|$

18. $|-6| + |-4|$

19. $-(-9)$

20. $-|-5|$

21. $2|-5| - |-5|$

22. $|-3| - 3 - 3$

In exercises 23-46, solve the equations.

23. $|x| = 3$

24. $|x| = 4$

25. $|x - 4| = 2$

26. $|x + 1| = 1$

27. $|x + 7| - 3 = 6$

28. $|x - 7| + 2 = 3$

29. $|2x - 4| = 5$

30. $|3x - 1| = 4$

31. $|5 - 3x| - 2 = 5$

32. $|6 - 2x| + 3 = 2$

33. $|x - 4| = 0$

34. $|x + 5| = 0$

35. $\left|\frac{x}{2} - 5\right| = \frac{3}{2}$

36. $\left|\frac{x}{3} - 2\right| = \frac{1}{2}$

37. $\left|\frac{2x}{3} - \frac{1}{2}\right| = \frac{5}{6}$

38. $\left|\frac{1}{4}x + \frac{1}{3}\right| = \frac{2}{3}$

39. $\left|\frac{2}{3} - x\right| = \frac{7}{2}$

40. $\left|\frac{3}{4} - 2x\right| = \frac{9}{2}$

41. $|7 - x| = -5$

42. $|-7 - x| = 2$

43. $\left|9x - \frac{5}{2}\right| = \frac{7}{3}$

44. $\left|6x + \frac{3}{2}\right| = \frac{1}{3}$

45. $\left|5 - \frac{3x}{2}\right| = \frac{11}{3}$

46. $\left|9 + \frac{x}{3}\right| = 1$

In exercises 85-138, solve and graph the inequality.

85. $|x| < 3$

89. $|x + 7| + 4 \leq 8$

93. $|2x - 4| < 7$

97. $|2x - 3| < -3$

101. $\left| \frac{2x}{3} - \frac{1}{2} \right| \leq \frac{11}{6}$

105. $|x - 1| > 5$

86. $|x| < 2$

90. $|x - 7| - 2 \leq 6$

94. $|-2x - 4| < 1$

98. $|3x - 1| \leq -2$

102. $|x + 1| < \frac{1}{2}$

106. $|x| \geq 5$

87. $|x - 2| < 5$

91. $|2x - 1| < 5$

95. $|3x - 4| - 5 \leq 3$

99. $|5x - 3| \leq -4$

103. $|x| > 3$

107. $|x + 5| \geq 6$

88. $|x + 2| < 3$

92. $|3x + 4| < 2$

96. $|2x + 3| + 5 \leq 6$

100. $|-3x + 6| < -5$

104. $|x| \leq 3$

108. $|x - 5| \leq 1$