



See Video 2.4

OBJECTIVE

**1** 9. Using Example 1 as a reference, explain how the graph of the solution set of an inequality can help you write the solution set in interval notation.

OBJECTIVE

**2** 10. From the lecture before Example 3, explain the addition property of inequality in your own words. What equality property does it closely resemble?

OBJECTIVE

**3** 11. Based on the lecture before Example 4, complete the following statement. If you multiply or divide both sides of an inequality by the \_\_\_\_\_ nonzero negative number, you must \_\_\_\_\_ the direction of the inequality symbol.

OBJECTIVE

**4** 12. What words or phrases in the Example 7 statement tell you this is an inequality application (besides the last line telling you to use an inequality)?

## 2.4 Exercise Set

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Graph the solution set of each inequality and write it in interval notation. See Example 1.

- |                               |                                   |
|-------------------------------|-----------------------------------|
| 1. $\{x \mid x < -3\}$        | 2. $\{x \mid x > 5\}$             |
| 3. $\{x \mid x \geq 0.3\}$    | 4. $\{x \mid x < -0.2\}$          |
| 5. $\{x \mid -7 \leq x\}$     | 6. $\{x \mid -7 \geq x\}$         |
| 7. $\{x \mid -2 < x < 5\}$    | 8. $\{x \mid -5 \leq x \leq -1\}$ |
| 9. $\{x \mid 5 \geq x > -1\}$ | 10. $\{x \mid -3 > x \geq -7\}$   |

Solve. Graph the solution set and write it in interval notation. See Examples 2 through 4.

- |                           |                           |
|---------------------------|---------------------------|
| 11. $x - 7 \geq -9$       | 12. $x + 2 \leq -1$       |
| 13. $7x < 6x + 1$         | 14. $11x < 10x + 5$       |
| 15. $8x - 7 \leq 7x - 5$  | 16. $7x - 1 \geq 6x - 1$  |
| 17. $\frac{3}{4}x \geq 6$ | 18. $\frac{5}{6}x \geq 5$ |
| 19. $5x < -23.5$          | 20. $4x > -11.2$          |
| 21. $-3x \geq 9$          | 22. $-4x \geq 8$          |

Solve. Write the solution set using interval notation. See Examples 5 through 7.

23.  $-2x + 7 \geq 9$
24.  $8 - 5x \leq 23$
25.  $15 + 2x \geq 4x - 7$
26.  $20 + x < 6x - 15$
27.  $4(2x + 1) > 4$
28.  $6(2 - 3x) \geq 12$
29.  $3(x - 5) < 2(2x - 1)$
30.  $5(x + 4) \leq 4(2x + 3)$
31.  $\frac{5x + 1}{7} - \frac{2x - 6}{4} \geq -4$
32.  $\frac{1 - 2x}{3} + \frac{3x + 7}{7} > 1$

33.  $-3(2x - 1) < -4[2 + 3(x + 2)]$

34.  $-2(4x + 2) > -5[1 + 2(x - 1)]$

### MIXED PRACTICE

Solve. Write the solution set using interval notation. See Examples 1 through 7.

35.  $x + 9 < 3$
36.  $x - 9 < -12$
37.  $-x < -4$
38.  $-x > -2$
39.  $-7x \leq 3.5$
40.  $-6x \leq 4.2$
41.  $\frac{1}{2} + \frac{2}{3} \geq \frac{x}{6}$
42.  $\frac{3}{4} - \frac{2}{3} \geq \frac{x}{6}$
43.  $-5x + 4 \leq -4(x - 1)$
44.  $-6x + 2 < -3(x + 4)$
45.  $\frac{3}{4}(x - 7) \geq x + 2$
46.  $\frac{4}{5}(x + 1) \leq x + 1$
47.  $0.8x + 0.6x \geq 4.2$
48.  $0.7x - x > 0.45$
49.  $4(x - 6) + 2x - 4 \geq 3(x - 7) + 10x$
50.  $7(2x + 3) + 4x \leq 7 + 5(3x - 4) + x$
51.  $14 - (5x - 6) \geq -6(x + 1) - 5$
52.  $13y - (9y + 2) \leq 5(y - 6) + 10$
53.  $4(x - 1) \geq 4x - 8$
54.  $8(x + 3) \leq 7(x + 5) + x$
55.  $3x + 1 < 3(x - 2)$
56.  $7x < 7(x - 2)$
57.  $0.4(4x - 3) < 1.2(x + 2)$