

INEQUALITIES

R.5 EXERCISES

Write each expression in interval notation. Graph each interval.

1. $x < 0$

2. $x \geq -3$

3. $1 \leq x < 2$

4. $-5 < x \leq -4$

5. $-9 > x$

6. $6 \leq x$

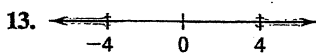
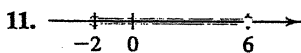
Using the variable x , write each interval in Exercises 7–14 as an inequality.

7. $(-4, 3)$

8. $[2, 7)$

9. $(-\infty, -1]$

10. $(3, \infty)$



Solve each inequality and graph the solution.

15. $-3p - 2 \geq 1$

17. $m - (4 + 2m) + 3 < 2m + 2$

19. $3p - 1 < 6p + 2(p - 1)$

21. $-7 < y - 2 < 4$

16. $6k - 4 < 3k - 1$

18. $-2(3y - 8) \geq 5(4y - 2)$

20. $x + 5(x + 1) > 4(2 - x) + x$

22. $8 \leq 3r + 1 \leq 13$

23. $-4 \leq \frac{2k - 1}{3} \leq 2$

24. $-1 \leq \frac{5y + 2}{3} \leq 4$

25. $\frac{3}{5}(2p + 3) \geq \frac{1}{10}(5p + 1)$

26. $\frac{8}{3}(z - 4) \leq \frac{2}{9}(3z + 2)$

Solve each of the following quadratic inequalities. Graph each solution.

27. $(m + 2)(m - 4) < 0$

28. $(t + 6)(t - 1) \geq 0$

29. $y^2 - 3y + 2 < 0$

30. $2k^2 + 7k - 4 > 0$

31. $q^2 - 7q + 6 \leq 0$

32. $2k^2 - 7k - 15 \leq 0$

33. $6m^2 + m > 1$

34. $10r^2 + r \leq 2$

35. $2y^2 + 5y \leq 3$

36. $3a^2 + a > 10$

37. $x^2 \leq 25$

38. $p^2 - 16p > 0$

Solve the following inequalities.

39. $\frac{m - 3}{m + 5} \leq 0$

40. $\frac{r + 1}{r - 1} > 0$

41. $\frac{k - 1}{k + 2} > 1$

42. $\frac{a - 5}{a + 2} < -1$

43. $\frac{2y + 3}{y - 5} \leq 1$

44. $\frac{a + 2}{3 + 2a} \leq 5$

45. $\frac{7}{k + 2} \geq \frac{1}{k + 2}$

46. $\frac{5}{p + 1} > \frac{12}{p + 1}$

47. $\frac{3x}{x^2 - 1} < 2$

48. $\frac{8}{p^2 + 2p} > 1$

49. $\frac{z^2 + z}{z^2 - 1} \geq 3$

50. $\frac{a^2 + 2a}{a^2 - 4} \leq 2$