

4.5 Practice Set

1. How are polynomial and rational inequalities different than their equation counterparts? Give an example.
2. Why can't you multiply both sides of an inequality by a variable expression?
3. Describe the method for solving rational inequalities.

Solve each of the following inequalities, graph your solution on a number line and write your solution in interval notation.

4. $(x + 3)(x - 1) > 0$

5. $(x - 5)(x + 4) \leq 0$

6. $x^2 + 4x < -3$

7. $x(x - 2)(x - 8) \leq 0$

8. $(x^2 - 16)(x^2 - 81) > 0$

9. $\frac{x-4}{x+3} > 0$

10. $\frac{x+2}{x-7} \leq 0$

11. $\frac{3x-5}{x-6} \geq 0$

12. $\frac{3}{x+9} < 2$

13. $\frac{x^2+8}{3x} \geq 2$

14. $x^2 > -9x$
15. $(3x - 6)(x + 2)(x - 3) \geq 0$
16. $21x^2 - 5x < 6$
17. $15x^3 + 25x^2 - 18x \leq 15$
18. $\frac{x}{x-2} < 0$
19. $\frac{4x}{x+3} \geq 0$
20. $\frac{3x-1}{x^2+8x} \leq 0$
21. $\frac{x^2+5x+4}{3x^2+4x-4} \geq 0$
22. $\frac{x}{x-5} < 2$
23. $\frac{x}{x-9} \geq 2x$
24. $\frac{x^2+4x+4}{4x} > 0$
25. $\frac{3x^3-27x}{x^2+4} \leq 0$

Distributed Practice Problems

Solve each of the following inequalities, graph your solution on a number line and write your solution in interval notation.

26. $-2|5x + 4| \leq -12$
27. $|7x - 8| + 9 < 5$
28. $x > -3x - 2$ and $7x > 2x + 5$

29. $9x > 5x - 16$ or $3x > x + 1$

30. $-2 \leq 3x - 8 < 13$