

HW: 2.8 Solving Inequalities in One Variable

Determine the x values that cause the polynomial function to be (a) zero, (b) positive, and (c) negative.

1. $f(x) = (x + 7)(x + 4)(x - 6)^2$

2. $f(x) = (2x^2 + 5)(x - 8)^2(x + 1)^3$

Complete the factoring if needed, and solve the polynomial inequality using a sign chart. Support graphically.

3. $(x + 1)(x^2 - 3x + 2) < 0$

4. $2x^3 - 3x^2 - 11x + 6 \geq 0$

Solve the polynomial inequality graphically.

5. $2x^3 - 5x^2 - x + 6 > 0$

6. $-x^3 - 3x^2 - 9x + 4 < 0$

Solve the following inequalities for the given function $f(x)$

7. $f(x) = (x^2 + 4)(2x^2 + 3)$

(a) $f(x) > 0$

(b) $f(x) \geq 0$

(c) $f(x) < 0$

(d) $f(x) \leq 0$

8. $f(x) = (x^2 + 4)(3 - 2x)^2$

(a) $f(x) > 0$

(b) $f(x) \geq 0$

(c) $f(x) < 0$

(d) $f(x) \leq 0$

Solve each inequality using sign charts. Write answers in interval notation.

9. $\frac{x-3}{x+1} > 0$

10. $\frac{(x-1)(x+1)}{x} \leq 0$

11. $\frac{(x-2)^2}{x^2-1} \geq 0$

12. $\frac{(x-3)(x+2)}{x-1} \leq 0$

13. $\frac{3x-5}{x+2} \leq 2$

14. $\frac{5}{x-3} > \frac{3}{x+1}$