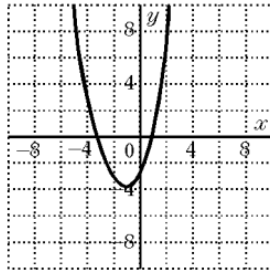


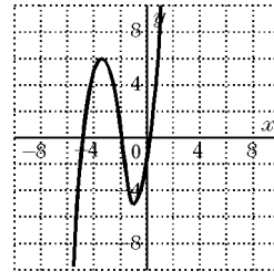
I. Solving Polynomial Inequalities

Use the graph to solve the inequality. Express your answer in interval notation.

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



2. $x^3 + 7x^2 + 10x \geq 0$



Consider $f(x) = x^4 - 6x^2 + 9$. Solve each inequality. Express your answer in interval notation.

3. $f(x) \leq 0$

4. $f(x) < 0$

5. $f(x) \geq 0$

6. $f(x) > 0$

Solve each inequality. Express your answer in interval notation.

7. $(x+4)(x-2)(x-6) > 0$

8. $x^4 + 35x^2 - 36 \geq 0$

9. $x^3 - 216 > 0$

10. $x^3 - 11x^2 - 8x + 88 \geq 0$

11. $15 - 2x - x^2 \leq 0$

12. $x(x-4)^2(x+5)^3 < 0$

II. Solving Rational Inequalities

Solve the inequality. State the answers in interval notation.

1. $\frac{x^2 + 7x + 12}{x} > 0$

2. $\frac{5-x}{x^2-4} \leq 0$

3. $\frac{x-3}{x+6} < 2$

4. $\frac{x^2 - 10x + 25}{(x^2 + 4)(x-1)^3} \leq 0$

5. $\frac{x^2 + 7x - 3}{x} \leq 0$

6. $\frac{3x+8}{x-3} \leq 4$

7. $\frac{3}{4} - \frac{1}{x-3} > \frac{x}{x+4}$

I. ANSWERS

1. $(-3,1)$
2. $[-5,-2] \cup [0,\infty)$
3. $[-\sqrt{3}] \cup [\sqrt{3}]$
4. no solution
5. $(-\infty,\infty)$
6. $(-\infty,-\sqrt{3}) \cup (-\sqrt{3},\sqrt{3}) \cup (\sqrt{3},\infty)$
7. $(-4,2) \cup (6,\infty)$
8. $(-\infty,-1] \cup [1,\infty)$
9. $(6,\infty)$
10. $[-\sqrt{8},\sqrt{8}] \cup [11,\infty)$
11. $(-\infty,-5) \cup (3,\infty)$
12. $(-5,0)$

II. ANSWERS

- | | |
|---|-----------------------------------|
| 1. $(-4,-3) \cup (0,\infty)$ | 2. $(-2,2) \cup [5,\infty)$ |
| 3. $(-\infty,-15) \cup (-6,\infty)$ | 4. $(-\infty,1) \cup [5]$ |
| 5. $\left(-\infty, \frac{-7-\sqrt{61}}{2}\right] \cup \left(0, \frac{-7+\sqrt{61}}{2}\right]$ | 6. $(-\infty,3) \cup [20,\infty)$ |
| 7. $(-4,3)$ | 8. |