Problem Set 2

Intermediate Math Circles Fall 2019
More Fun With Inequalities

Rational Inequalities

Solve each of the following inequalities algebraically and illustrate your answer on a number line.

1. \( \frac{1}{x} \leq -7 \)
2. \( \frac{3}{x - 2} \geq \frac{1}{4} \)
3. \( \frac{x - 3}{x + 1} < 2 \)

Absolute Values

Solve each of the following algebraically. Check your answer graphically.

1. \( |x + 6| = 5 \)
2. \( |x - 4| \geq 1 \)
3. \( |2x + 1| < 7 \)
4. \( |x - 2| + |x + 5| = 8 \)
5. \( |x| + |2 - x| \leq 12 \)
6. \( |x| \geq 7 \)
7. \( |x - 6| < 5 \)
8. \( |x + 2| \geq 8 \)

Solve each of the following inequalities graphically.

1. \( |3x| > 6 \)
2. \( |x + 1| + |x + 6| \geq 4 \)