Compound and Absolute Value Inequalities

Compound Inequalities

Intersection is an “and” statement

Union is an “or” statement

\((-\infty, 2] \cup (4, \infty)\) \hspace{1cm} \((-\infty, 2] \cap (4, \infty)\) \hspace{1cm} \((-\infty, 2] \cup (-1, \infty)\)

\(-2x + 3 > 4x - 5 \text{ or } \frac{3}{4}x < \frac{7}{5}x - 9\) \hspace{1cm} \(-2x + 3 > 4x - 5 \text{ and } \frac{3}{4}x < \frac{7}{5}x - 9\)

\(-3 < 5x - 2(7x - 8) \leq 4\)

- Absolute Value Inequalities
  - \(|x| < p\) : less than is an “and” statement
    - \(x < p\) and \(-x < p\)

\(|2x - 3| < 9\) \hspace{1cm} |4x - 3| \leq 2
\( |x| > p \): greater than is an “or” statement

\[
|x - 9| > 4 \\
|6x + 7| > 5
\]

\[
6 - 2|5x + 7| < 9 \\
9 + 4|2x - 1| \geq 5
\]

\[
|5x + 7| < -2 \\
|5x + 7| \geq -2
\]