

2.7C Solving Compound Inequalities

A. Method

A compound inequality is an inequality pair that is joined in AND or OR.

To solve these, we

1. Solve each inequality separately.
2. Graph each answer and form the AND/OR graph.
3. Write down the appropriate answer.

B. Examples

Example 1: Solve $3x - 4 < 8$ AND $5x + 4 > 9$

Solution

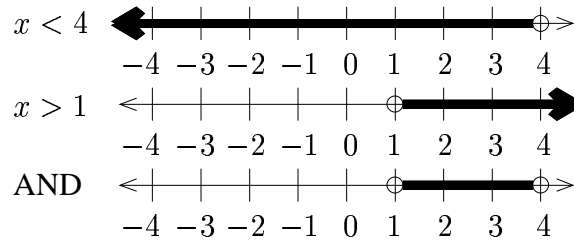
1. $3x - 4 < 8$ AND $5x + 4 > 9$

$$3x < 12 \quad \text{AND} \quad 5x > 5$$

$$\frac{3x}{3} < \frac{12}{3} \quad \text{AND} \quad \frac{5x}{5} > \frac{5}{5}$$

$$x < 4 \quad \text{AND} \quad x > 1$$

2. Graph:



“sandwich”

3. $1 < x < 4$

Ans $\boxed{1 < x < 4}$

Example 2: Solve $5x - 3 > 2$ OR $1 - 3x < -5$

Solution

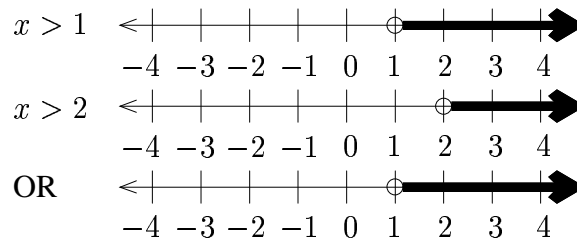
1. $5x - 3 > 2$ OR $1 - 3x < -5$

$5x > 5$ OR $-3x < -6$

$\frac{5x}{5} > \frac{5}{5}$ OR $\frac{-3x}{-3} > \frac{-6}{-3}$ inequality switches!

$x > 1$ OR $x > 2$

2. Graph:



3. $x > 1$

Ans $x > 1$