Compound Inequalities

Overview of problems

Example Set: A

Write an inequality for the verbal sentence

x is between 8 and 3

x is less than 1 but is at least −9

Write an inequality to match the graph

Example Set: B

Decide whether the number is a solution of the inequality

$-6 < 2x - 1 \leq 10$, -3

$3x < -9$ or $x \geq 12$, -1

Solve the inequality and graph the solution

$-10 < 5x \leq 15$

$x + 1 < 4 \quad \text{or} \quad 2x > 14$

$8 \leq 2x - 2 < 16$

$4 - 2x > 20 \quad \text{or} \quad 7 - x \leq 0$

Example Set: C

Solve the inequality and graph the solution

$-3x-7 \geq 2 \quad or \quad -2x-10 \leq -20$

$-12 < 3-4(x+5) \leq 6$

$8 \leq -2\left(\frac{1}{3}x+1\right) < 10$

Compound Inequalities

Overview of problems- KEY

Example Set: A

Write an inequality for the verbal sentence

x is between 8 and 3 $3 < x < 8$

x is less than 1 but is at least −9 $-9 \leq x < 1$

Write an inequality to match the graph

$-5 < x \leq 2$

$x \leq 3$ or $x > 7$

Example Set: B

Decide whether the number is a solution of the inequality

$-6 < 2x - 1 \leq 10$, -3

not a solution

$3x < -9$ or $x \geq 12$, -1

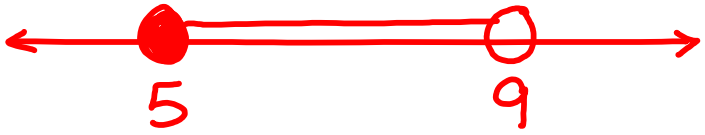
not a solution

Solve the inequality and graph the solution

$-10 < 5x \leq 15$ $\quad -2 < x \leq 3$

$x + 1 < 4$ or $2x > 14$ $x < 3$ or $x > 7$

$8 \leq 2x - 2 < 16$ $5 \leq x < 9$



$4 - 2x > 20$ or $7 - x \leq 0$ $x < -8$ or $x \geq 7$

Example Set: C

Solve the inequality and graph the solution

$-3x-7 \geq 2$ or $-2x-10 \leq -20$

$x \leq -3$ or $x \geq 5$

$-12 < 3-4(x+5) \leq 6$

$-\frac{5}{4} > x \geq -\frac{23}{4}$

$8 \leq -2\left(\frac{1}{3}x+1\right) < 10$

$-15 \geq x > -18$