

Exercise 72

For the following exercises, solve the inequality and express the solution using interval notation.

$$\left| \frac{1}{3}x - 2 \right| \leq 7$$

Solution

Remove the absolute value sign by considering two different inequalities joined by “and.”

$$\frac{1}{3}x - 2 \leq 7 \quad \text{and} \quad \frac{1}{3}x - 2 \geq -7$$

Combine the two conditions.

$$-7 \leq \frac{1}{3}x - 2 \leq 7$$

Add 2 to all sides.

$$-5 \leq \frac{1}{3}x \leq 9$$

Multiply all sides by 3.

$$-15 \leq x \leq 27$$

Therefore, in interval notation,

$$[-15, 27].$$