

Exercise 31

For the following exercises, solve each inequality and write the solution in interval notation.

$$|3x - 4| \leq 8$$

Solution

Remove the absolute value sign by breaking up the inequality into two; using the logical operators, “and” or “or,” if you have $<$ or $>$, respectively; and solving for x .

$$|3x - 4| \leq 8$$

$$3x - 4 \leq 8 \quad \text{and} \quad 3x - 4 \geq -8$$

$$-8 \leq 3x - 4 \leq 8$$

Add 4 to all sides.

$$-4 \leq 3x \leq 12$$

Divide all sides by 3.

$$-\frac{4}{3} \leq x \leq 4$$

Therefore,

$$x \in \left[-\frac{4}{3}, 4 \right].$$