

Exercise 24

For the following exercises, solve the equations below and express the answer using set notation.

$$-\left|\frac{1}{3}x + 5\right| + 14 = 0$$

Solution

Isolate the absolute value term. Subtract both sides by 14.

$$-\left|\frac{1}{3}x + 5\right| = -14$$

Multiply both sides by -1 .

$$\left|\frac{1}{3}x + 5\right| = 14$$

Remove the absolute value sign by placing \pm (read as “plus or minus”) on the right side.

$$\frac{1}{3}x + 5 = \pm 14$$

$$\frac{1}{3}x + 5 = 14 \quad \text{or} \quad \frac{1}{3}x + 5 = -14$$

$$\frac{1}{3}x = 9 \quad \text{or} \quad \frac{1}{3}x = -19$$

$$x = 27 \quad \text{or} \quad x = -57$$

Therefore,

$$x = \{-57, 27\}.$$