Exercise 17

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

$$5|x - 4| - 7 = 2$$

Solution

Isolate the absolute value term. Start by adding 7 to both sides.

$$5|x - 4| = 9$$

Divide both sides by 5.

$$|x - 4| = \frac{9}{5}$$

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

$$x - 4 = \pm\frac{9}{5}$$

$$x - 4 = \frac{9}{5} \quad \text{or} \quad x - 4 = -\frac{9}{5}$$

$$x = 4 + \frac{9}{5} \quad \text{or} \quad x = 4 - \frac{9}{5}$$

$$x = \frac{29}{5} \quad \text{or} \quad x = \frac{11}{5}$$

Therefore,

$$x = \left\{\frac{11}{5}, \frac{29}{5}\right\}.$$