

Algebra 2: Homework 5

In 1 – 4, solve each inequality and graph its solution set on a number line.

1. $(2x + 7 < -11) \vee (-3x - 2 < 13)$

2. $5 \leq \frac{x}{3} + 5 < 6$

3. $(2x - 2 < -2) \vee (3(x + 5) > 2x + 15)$

4. $(3x - 2 > -8) \wedge (2x + 1 < 9)$

5. Which of the following numbers are *irrational*?

$$\sqrt{2} \quad \sqrt{3} \quad \sqrt{4} \quad \sqrt{5} \quad \sqrt{6}$$

6. True or False:

a. The set of natural numbers (\mathbb{N}) has a smallest element.

b. The set of integers (\mathbb{Z}) has a smallest element.

c. If $x \in \mathbb{Q}$, then $x \in \mathbb{Z}$.

d. If $x \in \mathbb{N}$, then $x \in \mathbb{R}$.

7. Determine under which operations ($+$, $-$, \times , \div) the set

$\{ x \in \mathbb{Z} \mid (8x - 1 > -9) \wedge (-5x > 10) \}$ is closed. Explain.