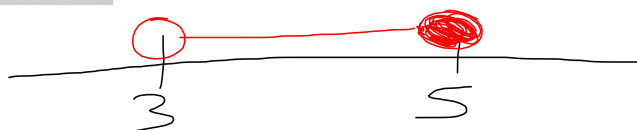


Solutions

1. Graph each of the following on a number line.

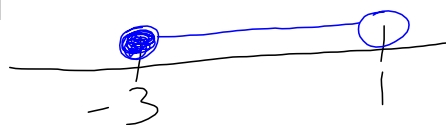
(a) $\{x \mid 3 < x \leq 5, x \in \mathbf{N}\}$



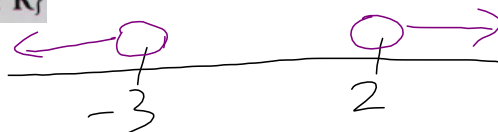
(c) $\{s \mid s < -3, s \in \mathbf{R}\}$



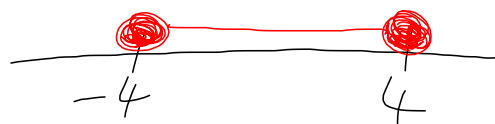
(e) $\{x \mid -3 \leq x < 1, x \in \mathbf{R}\}$



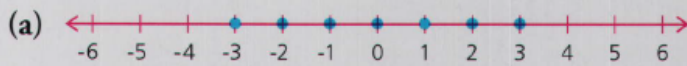
(g) $\{x \mid x < -3 \text{ or } x > 2, x \in \mathbf{R}\}$



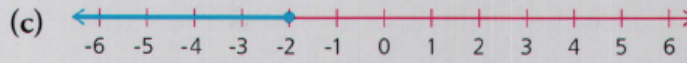
(i) $\{x \mid x^2 \leq 16, x \in \mathbf{R}\}$



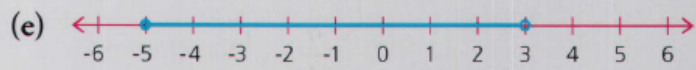
2. Describe each of the following in set notation.



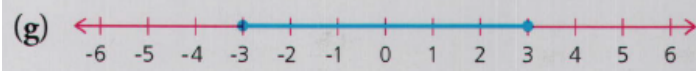
$$\{-3, -2, -1, 0, 1, 2, 3\}$$



$$\{x \in \mathbb{R} \mid x \leq -2\}$$



$$\{x \in \mathbb{R} \mid -5 \leq x < 3\}$$



$$\{x \in \mathbb{R} \mid -3 \leq x \leq 3\}$$

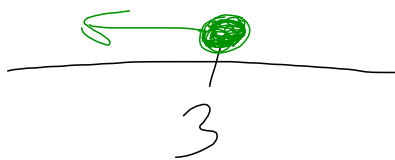
3. Solve and graph each solution set.

(a) $3a - 2 \leq 7$

$$3a - 2 \leq 7$$

$$\frac{3a}{3} \leq \frac{9}{3}$$

$$a \leq 3$$



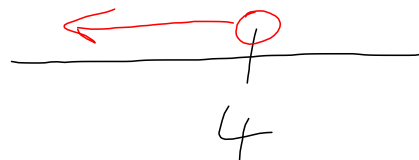
(c) $5 - 2x > x - 7$

$$5 - 2x > x - 7$$

$$5 + 7 > x + 2x$$

$$\frac{12}{3} > \frac{3x}{3}$$

$$4 > x$$



3. Solve and graph each solution set.

(e) $10 < 5 - (2x - 1)$

$$10 < 5 - (2x - 1)$$

$$10 < 5 - 2x - (-1)$$

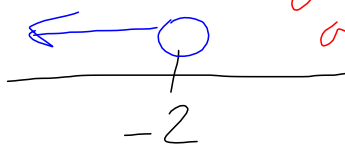
$$10 < 5 - 2x + 1$$

$$10 < 6 - 2x$$

$$4 < \frac{-2x}{-2}$$

$$\frac{-2}{-2} > x$$

$$-2 > x$$



Switch sign because dividing by a negative

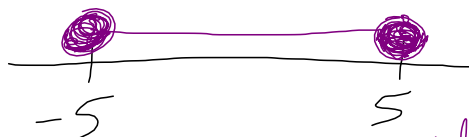
(g) $r^2 \leq 25$

$$r^2 \leq 25$$

$$r \leq \sqrt{25}$$

$$r \leq 5 \quad r \geq -5$$

switch sign because you "are" dividing by -5.



If you square any value between -5 and 5 the answer is less than 25.

4. Solve and graph.

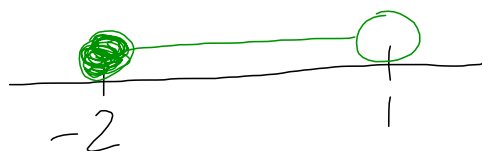
(a) $1 \leq x + 3 < 4$

$$1 \leq x + 3 < 4$$

Treat as 2 equations

$$1 \leq x + 3 \quad \text{and} \quad x + 3 < 4$$

$$-2 \leq x \quad x < 1$$



(c) $4 < \frac{4-2b}{-3} < 8$

$$4 < \frac{4-2b}{-3} < 8$$

Treat as 2 equations

$$4 < \frac{4-2b}{-3} \quad \frac{4-2b}{-3} < 8$$

$$-12 > 4 - 2b \quad 4 - 2b > -24$$

$$\frac{-16}{-2} > \frac{-2b}{-2} \quad \frac{-2b}{-2} > \frac{-28}{-2}$$

$$8 < b \quad b < 14$$

