

## Solving Radical Inequalities

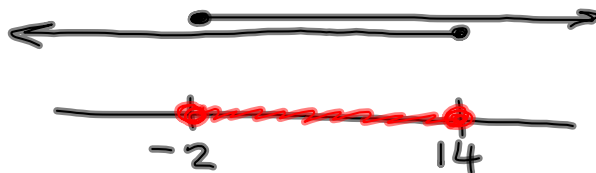
1. Solve the inequality.
2. Set the radicand  $\geq 0$ , then solve.
3. Graph #1 & #2 on a number line.
4. Find where shading is in common.
5. Write solution in interval notation.

1.  $\sqrt{x+2} \leq 4$

①  $(\sqrt{x+2})^2 \leq (4)^2$   
 $x+2 \leq 16$   
 $x \leq 14$

②  $x+2 \geq 0$   
 $x \geq -2$

and



Solution:  $[-2, 14]$

$$2. \quad \sqrt{5x-16} < \sqrt{2x-4}$$

$$\textcircled{1} (\sqrt{5x-16})^2 < (\sqrt{2x-4})^2$$

$$5x-16 < 2x-4$$

$$3x < 12$$

$$x < 4$$

$$\textcircled{2} 5x-16 \geq 0$$

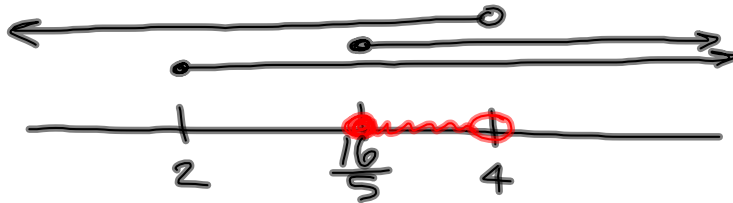
$$5x \geq 16$$

$$x \geq \frac{16}{5}$$

$$\textcircled{3} 2x-4 \geq 0$$

$$2x \geq 4$$

$$x \geq 2$$



$$[\frac{16}{5}, 4)$$

$$3. \quad -\sqrt{5x+13} \leq -2$$

$$\textcircled{1} \frac{-\sqrt{5x+13}}{-1} \leq \frac{-2}{-1}$$

$$(\sqrt{5x+13})^2 \geq (2)^2$$

$$5x+13 \geq 4$$

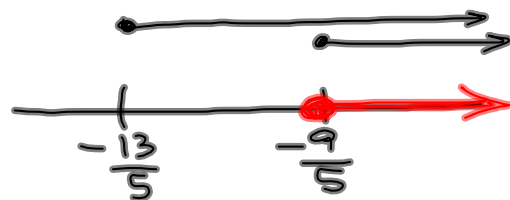
$$5x \geq -9$$

$$x \geq -\frac{9}{5}$$

$$\textcircled{2} 5x+13 \geq 0$$

$$5x \geq -13$$

$$x \geq -\frac{13}{5}$$



$$[-\frac{9}{5}, \infty)$$