

**Notes: 5.8 Solving Radical Inequalities**

Solve each inequality. Answers should be given using interval notation. Use a number line to assist you.

1.  $\sqrt{x+5} - 1 \leq 4$

$$\sqrt{x+5} \leq 5$$

$$x+5 \leq 25$$

$$x \leq 20$$

Solution  
 $[-5, 20]$

\* Identify restrictions on domain

$$x+5 \geq 0$$

$$x \geq -5$$



②

$$\sqrt{x+5} - 1 \geq 4$$

$$x \geq 20$$

$$[20, \infty)$$

restriction on domain

$$x+5 \geq 0$$

$$x \geq -5$$

2.

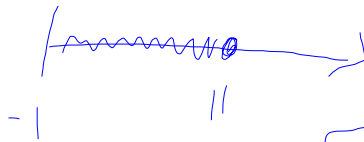
$$\sqrt{3x+3} \leq 6$$

$$3x+3 \leq 36$$

$$3x \leq 33$$

$$x \leq 11$$

But wait!  
 $3x+3 \geq 0$   
 $3x \geq -3$   
 $x \geq -1$



Solution  $[-1, 11]$

4.

$$\sqrt{3x-1} > \sqrt{x+7}$$

$$3x-1 > 0$$

$$x \geq \frac{1}{3}$$

$$x+7 \geq 0$$

$$x \geq -7$$

$$3x-1 > x+7$$

$$2x > 8$$

$$x > 4$$

Solution  
 $(4, \infty)$