= answer

Algebra 2 6.7

Solve inequalities containing radicals

legal window

inverse operations

extraneous

radical equation

real solutions

(when is something not real?)

$x > 3$

$\sqrt{\text{neg}}$

whiteboards(?)

Quiz Thurs. 6.7

Test Fri. Ch. 6

- Equations: check at the end (specific answers)

- Inequalities: check at the beginning (what will be legal?)
  How can I make sure my answer will be *real*?

2 Solve Radical Inequalities

A **radical inequality** has a variable in the radicand. To solve radical inequalities, complete the following steps.

KeyConcept Solving Radical Inequalities

Step 1 If the index of the root is even, identify the values of the variable for which the radicand is nonnegative.

What will make it REAL? This is your window.

Step 2 Solve the inequality algebraically.

Step 3 Test values to check your solution.

$x-3$ can't be neg.

$x-3 \geq 0$

$+3 \quad +3$

$x \geq 3$

$x > 19$

$$\sqrt{x-3}+1 \geq 5$$

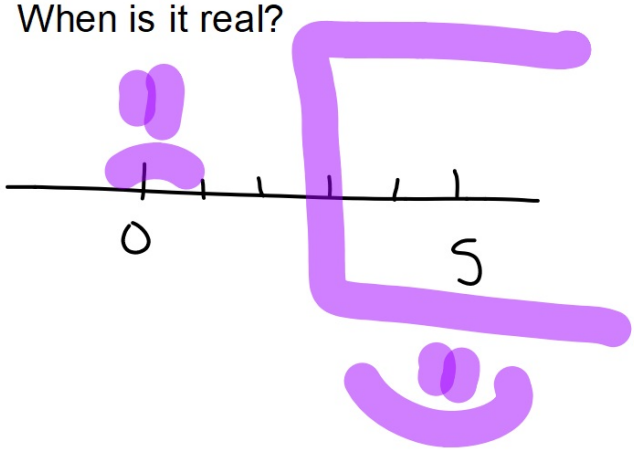
$-1 \quad -1$

$\sqrt{x-3} > 4$

$x-3 > 16$

$x > 19$

When is it real?



$$\sqrt{x-3}+1 < 5$$

Example 4 Solve a Radical Inequality

Solve $3 + \sqrt{5x - 10} \leq 8$.

$\sqrt{\text{must be real}}$

(When would it not be real?)

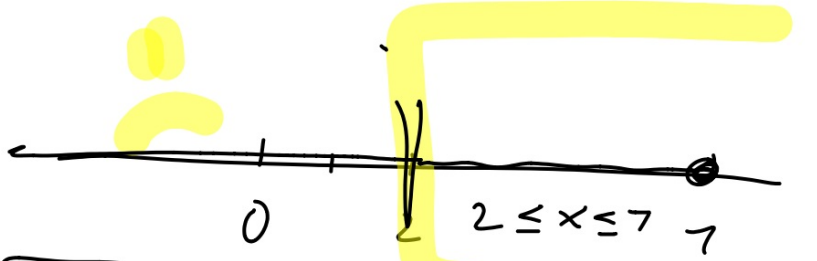
What would be legal? Find your window first.

$5x - 10 \geq 0$

$+10 \quad +10$

$\frac{5x}{5} \geq \frac{10}{5}$

$x \geq 2$



$3 + \sqrt{5x-10} \leq 8$

$-3 \quad -3$

$\left(\sqrt{5x-10}\right)^2 \leq 5^2$

$5x - 10 \leq 25$

$+10 \quad +10$

$\frac{5x}{5} \leq \frac{35}{5}$

$x \leq 7$

GuidedPractice

Solve each inequality.

4A. $\sqrt{2x+2}+1 \geq 5$

$-1 \quad -1$

$2x+2 \geq 0$

$-2 \quad -2$

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

$x \geq -1$

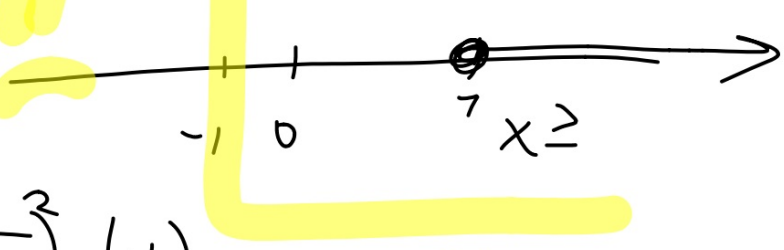
$\left(\sqrt{2x+2}\right)^2 \geq (4)^2$

$2x+2 \geq 16$

$-2 \quad -2$

$2x \geq 14$

$x \geq 7$



4B. $\sqrt{4x-4}-2<4$

$4x-4 \geq 0$

$4x \geq 4$

$x \geq 1$

$\sqrt{4x-4}^2 < 6^2$

$4x-4 < 36$

$+4 \quad +4$

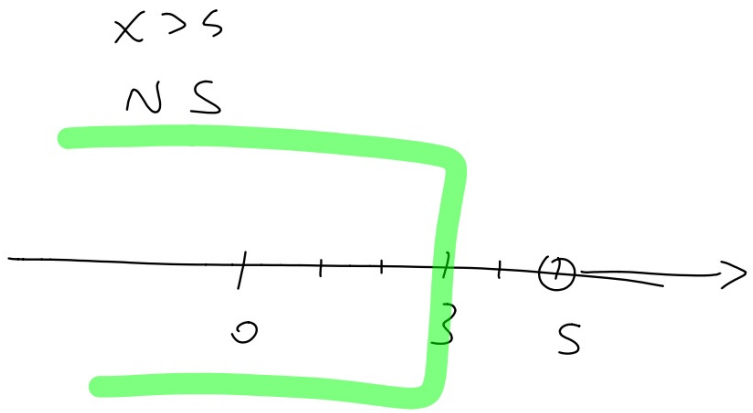
$4x < 40$

$x < 10$

15. $\sqrt{3x+4} - 5 \leq 4$

18. $\sqrt{3a+3}-1 \leq 2$

19. $1 + \sqrt{7x - 3} > 3$


x > 5
N S
0
3
5