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Solving radical inequalities: ^{pg 7}

① $(\sqrt{x-6})^2 < (2)^2$ ① isolate the radical
 ② clear the radical
 * ③ solve

$$x - 6 < 4$$

$$x < 10$$

and

$$x - 6 \geq 0$$

$$x \geq 6$$

$[6, 10)$

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⑧ $\sqrt{3x+8} - 2 \geq 4$

$$(\sqrt{3x+8})^2 \geq (6)^2$$

$$3x+8 \geq 36$$

$$3x \geq 28$$

$$x \geq \frac{28}{3}$$

$[\frac{28}{3}, \infty)$

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11. $(\sqrt[3]{4x-1})^3 < (3)^3$ $\sqrt[3]{-8}$
 -2

$$4x-1 < 27$$

$$4x < 28$$

$$x < \frac{28}{4}$$

$$x < 7$$

$(-\infty, 7)$

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12) $\sqrt[3]{2x-8} + 5 > 1$

$$(\sqrt[3]{2x-8})^3 > (-4)^3$$

$$2x-8 > -64$$

$$2x > -56$$

$$x > -28$$

$(-28, \infty)$

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5) $(\sqrt{5-3x})^2 \leq (4)^2$ $5-3x \geq 0$

$$5-3x \leq 16$$

$$\frac{-3x}{-3} \leq \frac{11}{-3}$$

$$x \geq -\frac{11}{3}$$

$5-3x \geq 0$
 $\frac{-3x}{-3} \geq \frac{-5}{-3}$
 $x \leq \frac{5}{3}$

$[-\frac{11}{3}, \frac{5}{3}]$

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$$15) (\sqrt[4]{3x-7}) \leq (2)^4 \quad * 3x-7 \geq 0$$

$$3x-7 \leq 16 \quad 3x \geq 7$$

$$3x \leq 23 \quad x \geq \frac{7}{3}$$

$$x \leq \frac{23}{3}$$

$$\left[\frac{7}{3}, \frac{23}{3}\right]$$

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$$16) (\sqrt[4]{5x+7}) \leq (2)^4$$

$$5x+7 \leq 16 \quad 5x+7 \geq 0$$

$$5x \leq 9 \quad 5x \geq -7$$

$$x \leq \frac{9}{5} \quad x \geq -\frac{7}{5}$$

$$\left[-\frac{7}{5}, \frac{9}{5}\right]$$

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$$17) (\sqrt{5x+10}) \leq (10)^2$$

$$5x+10 \leq 100$$


$$5x \leq 90$$

$$x \leq 18$$

2nd

$$* 5x+10 \geq 0 *$$

$$5x \geq -10$$

$$x \geq -2$$


$$[-2, 18]$$

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$$18) (\sqrt{4x+10}) \geq (6)^2$$

$$4x+10 \geq 36$$

$$4x \geq 26$$

$$x \geq \frac{26}{4}$$

$$x \geq \frac{13}{2}$$


$$\left[\frac{13}{2}, \infty\right)$$

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$$19) (\sqrt{3x-4}) \geq (5)^2$$

$$3x-4 \geq 25$$

$$3x \geq 29$$

$$x \geq \frac{29}{3}$$


$$\left[\frac{29}{3}, \infty\right)$$

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