

Name: _____
PCH: More Solving Radical Equations

Date: _____
Ms. Loughran

Do Now:
Solve for x.

1. $(2\sqrt{x})^2 = (\sqrt{4x-3} + 1)^2$

$4x-3 \geq 0$ $x \geq 0$
 $x \geq 3/4$

$\sqrt{4x-3} + 1 \geq 0$
no restriction
needed here,
it is positive

$$\cancel{4x} = 1 + 2\sqrt{4x-3} + \cancel{4x-3}$$

$$2 = 2\sqrt{4x-3}$$

$$1 = \sqrt{4x-3}$$

$$1 = 4x-3$$

$$4 = 4x$$

$$x = 1$$

final restriction set:
 $[\frac{3}{4}, \infty)$

Classwork:
Solve for x.

2. $(\sqrt{x+2} - \sqrt{x-3})^2 = 1$ $x \geq -2$ $x \geq 3$

$$x+2 + x-3 - 2\sqrt{(x+2)(x-3)} = 1$$

$$2x-1 - 2\sqrt{x^2-x-6} = 1$$

$$x-1 \geq 0$$

$$x \geq 1$$

$$2x-2 = 2\sqrt{x^2-x-6}$$

$$(x-1)^2 = (\sqrt{x^2-x-6})^2$$

final restriction set:
 $[3, \infty)$

$$\cancel{x^2} - 2x + 1 = \cancel{x^2} - x - 6$$

$$7 = x$$

6. $\sqrt[4]{2x-8} = \sqrt[4]{6-5x}$

$$2x-8 \geq 0$$

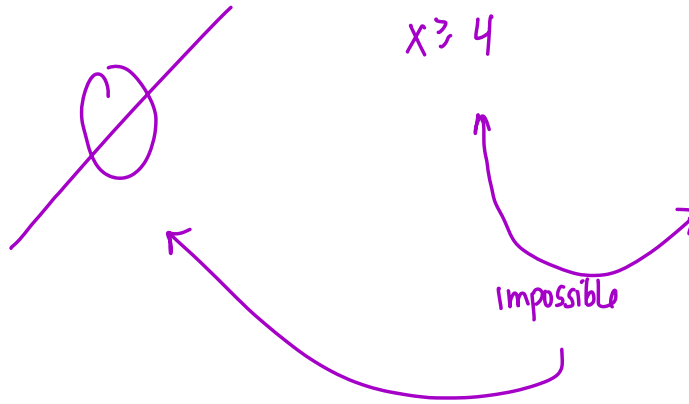
$$x \geq 4$$

$$6-5x \geq 0$$

$$6 \geq 5x$$

$$\frac{6}{5} \geq x$$

$$x \leq \frac{6}{5}$$



Homework 03-14

$$(6) \quad x=2 \quad r: \left[-\frac{1}{4}, 14\right]$$

$$(10) \quad x=4 \quad r: [0, 8]$$

$$(7) \quad x=5 \quad r: \left[-\frac{1}{3}, 16\right]$$

$$(8) \quad x=16 \quad r: [7, 49]$$

$$(9) \quad x=9 \quad r: \left[\frac{3}{2}, \infty\right)$$

$$9. \quad 2x - 5\sqrt{x} - 3 = 0$$

$$x \geq 0 \quad 2x - 3 \geq 0 \\ x \geq \frac{3}{2}$$

$$2x - 3 = 5\sqrt{x}$$

$$4x^2 - 12x + 9 = 25x$$

$$4x^2 - 37x + 9 = 0$$

$$4x^2 - 36x - x + 9 = 0$$

$$4x(x-9) - 1(x-9) = 0$$

$$(4x-1)(x-9) = 0$$

$$x = \frac{1}{4}, x = 9$$

$$\therefore x \geq \frac{3}{2}$$