Chapter 12-3 Solving Radical Equations Notes - Day 1

- must isolate the radical if necessary

- undo the radical by squaring both sides of the equation

- remember a radical by itself cannot equal a negative number; if this occurs there is no real solution.

Solve.

① $\sqrt{x} - 20 = 0$

$+20 \quad +20$

$\sqrt{x} = 20$

$(\sqrt{x})^2 = (20)^2$

$x = 400$

Solve.

② $\sqrt{x} + 6 = 0$

$-6 \quad -6$

$\sqrt{x} = -6$

Not possible, no real solution

Solve.

③ $\sqrt{5x+1} + 8 = 12$

$-8 \quad -8$

$\sqrt{5x+1} = 4$

$(\sqrt{5x+1})^2 = (4)^2$

$5x+1 = 16$

$-1 \quad -1$

$5x = 15$

$x = 3$

Solve.

④ $\sqrt{6x-2} - 7 = 25$

Solve.

④ $\sqrt{6x-2} - 7 = 25$

$+7 \quad +7$

$\sqrt{6x-2} = 32$

$(\sqrt{6x-2})^2 = (32)^2$

$6x - 2 = 1024$

$6x = 1026$

$x = 171$

Solve.

(5) $\sqrt{\frac{1}{3}x + 2} = 8$

Solve.

(5) $\sqrt{\frac{1}{3}x + 2} = 8$

$\left(\sqrt{\frac{1}{3}x + 2}\right)^2 = (8)^2$

$\frac{1}{3}x + 2 = 64$

$\frac{3}{1} \cdot \frac{1}{3}x = \frac{62}{1} \cdot \frac{3}{1}$

$x = 186$

Solve.

(6) $5 - \sqrt{4x - 3} = 3$

Solve.

(6) $5 - \sqrt{4x-3} = 3$

$-5 \qquad\qquad -5$

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

$\overline{-1} \qquad\qquad \overline{-1}$

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

$\left(\sqrt{4x-3}\right)^2 = (2)^2$

$4x - 3 = 4$

$4x = 7$

$x = 7/4$ or $1\,3/4$