Algebra II

6-5

Equations Containing Radicals

Compare / Contrast

$\sqrt{x} = -7$
$x = 49$

Solve.

$x^2 = 49$ vs. $\sqrt{x} = 7$

$\sqrt{x^2} = \sqrt{49}$

$|x| = 7$

$x = \pm 7$

$\{\pm 7\}$

When you radical both sides, you need absolute value. You don't need to check your answers.

$(\sqrt{x})^2 = (7)^2$

$x = 49$

$\{49\}$

When you square both sides, never use absolute value. You must check your answers.

Solve. If an equation has no real solution, say so. (pg 280)

1) $\left(\sqrt{4x - 3}\right)^2 = (5)^2$

$4x - 3 = 25$

$4x = 28$

$x = 7$

$\{7\}$

17) $\sqrt{2x+5} - 1 = x$

You can't do this!

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

You can do this

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

but this makes for a nasty FOIL.

Let's do ⟶

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

$2x+5 = x^2+2x+1$

$0 = x^2 - 4$

$0 = (x+2)(x-2)$

$\{\cancel{x}\pm 2\}$

$\{2\}$

25) $\sqrt{y}+\sqrt{y+5}=5$

$$\sqrt{y+5}^{2}=(5-\sqrt{y})^{2}$$

$$y+5=(5-\sqrt{y})(5-\sqrt{y})$$

$$y+5=25-5\sqrt{y}-5\sqrt{y}+y$$

$$y+5=25-10\sqrt{y}+y$$

$$-20=-10\sqrt{y}$$

$$2^{2}=\sqrt{y}^{2}$$

$$4=y$$

$$\{4\}$$

Assignment:

Pg. 280
2-32 even, 35, 36