Now you try this one.

Solve.

$$(x+7)^{\frac{2}{3}} + 2 = 18$$

$$-2 \qquad -2$$

$$\left[(x+7)^{2/3}\right]^{3/2} = (16)^{3/2} = (\sqrt{16})^3 = (\pm 4)^3$$

$$= \pm 64$$

$$x+7 = 64-7 = 57$$

$$-64-7 = -71$$

$$\boxed{x = -71, 57}$$

Solve.

$$\left(\sqrt{x^2+5}\right)^2 = \left(\sqrt{x+11}\right)^2$$

$$x^2+5 = x+11$$

$$\boxed{x = 3, -2}$$

$$x^2 - x - 6 = 0$$

-6

-3 2

-1

$$(x-3)(x+2) = 0$$

What is different about this one? There is an x outside of the radical.

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

$$-1 \qquad -1$$

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

$$3x-5 = x^2-2x+1$$

+6

-2 -3

-5

$$0 = x^2-5x+6$$

$$0 = (x-2)(x-3)$$

$$\boxed{x = 2, 3}$$

Solve.

$$\sqrt{3x+13} - 5 = x$$

$$+5 \qquad +5$$

$$\left(\sqrt{3x+13}\right)^2 = (x+5)^2$$

$$3x+13 = x^2+10x+25$$

$$-3x \quad -13 \qquad -3x \quad -13$$

12

+4 +3

+7

$$0 = x^2+7x+12$$

$$0 = (x+3)(x+4)$$

$$\boxed{x = -3, -4}$$

es

Solve. $\sqrt{24-4x}+3=x$

$-3 \quad -3$

$\left(\sqrt{24-4x}\right)^2=(x-3)^2$

$24-4x = x^2-6x+9$

$0 = x^2-2x-15=(x-5)(x+3)$

-15; -5, $+3$; -2

$x=5, -3$

Extraneous

$\boxed{x=5}$

The last step in any solving process is to:

CHECK YOUR ANSWERS!

Solve.

$\sqrt{5x+10}-2=x$

$+2 \quad +2$

$\left(\sqrt{5x+10}\right)^2=(x+2)^2$

$5x+10 = x^2+4x+4$

$-5x \; -10 \quad -5x \; -10$

$0 = x^2-x-6$

$0 = (x-3)(x+2)$

-6; -3, 2; -1

$\boxed{x=3,-2}$

Solve.

$(2x-1)^{\frac{3}{4}}-10=17$

$+10 \quad +10$

$\left[(2x-1)^{3/4}\right]^{4/3}=(27)^{4/3} \longrightarrow \left(\sqrt[3]{27}\right)^4$

$(3)^4=81$

$2x-1 = 81$

$+1 \quad +1$

$\dfrac{2x}{2}=\dfrac{82}{2}$

$x=41$

Do you think that there could be extraneous solutions for this equation?

No, since this is an odd radical you can get both a positive and negative number out of that, unlike even radicals which only leads to positive values.

$\left(\sqrt[3]{x^2-7}\right)^3=\left(\sqrt[3]{x-1}\right)^3$

Solve.

$x^2-7 = x-1$

$x^2-x-6=0$

$(x-3)(x+2)=0$

$x=3,-2$

-6; -3, 2; -1