Answer key

The method: Solving radical equations

Get the root alone, square both sides, and solve. Check each answer in the original equation.

$\sqrt{x + 9} = x - 3$ $x = 7$

$x + 9 = (x - 3)^2$ square both sides

$x^2 - 7x = 0$ move every term to one side

$(x)(x - 7) = 0$ factor

$x = 0$ or $x = 7$ set each factor equal to 0

$x = 0$ gives $\sqrt{9} = -3$, which is false. check each answer

$x = 7$

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

$\sqrt{x + 5} = 2$ add 1 to get the root alone

$x + 5 = 4$ square both sides

$x = -1$

$\sqrt{5x + 24} = 3$ $x = -3$

$5x + 24 = 9$ square both sides

$5x = -15$ subtract 24

$x = -3$ divide by 5

Problems 1 and 2 worked out · Version 0A

$\sqrt{x + 2} = x$ $x = 2$

$x + 2 = x^2$ square both sides

$x^2 - x - 2 = 0$ move every term to one side

$(x + 1)(x - 2) = 0$ factor

$x = -1$ or $x = 2$ set each factor equal to 0

$x = -1$ gives $\sqrt{1} = -1$, which is false. check each answer

$x = 2$

$\sqrt{4x + 21} - 7 = 0$ $x = 7$

$\sqrt{4x + 21} = 7$ add 7 to get the root alone

$4x + 21 = 49$ square both sides

$4x = 28$

$x = 7$ divide by 4

Solving radical equations · Version 0A

1) $x = 2$ 2) $x = 7$ 3) $x = 1$ 4) $x = 4$ 5) $x = 0$
6) $x = -6$ or $x = -5$ 7) $x = 5$ 8) $x = 0$