

Solve each equation. Make sure you check for extraneous solutions!!

<p>1. $(\sqrt{3x})^2 = (6)^2$ $3x = \frac{36}{3}$ $x = 12$ ✓</p> <p>check 12 $\sqrt{3 \cdot 12} = 6$ $\sqrt{36} = 6$ $6 = 6$ ✓</p>	<p>2. $\sqrt[3]{x-2} = 2$</p> <p>$x = 10$ ✓</p>
<p>3. $(2\sqrt{x})^2 = (\sqrt{x+9})^2$ $4x = x+9$ $3x = 9$ $x = 3$ ✓</p> <p>check 3 $2\sqrt{3} = \sqrt{3+9}$ $2\sqrt{3} = \sqrt{12}$ $2\sqrt{3} = 2\sqrt{3}$ ✓</p>	<p>4. $\sqrt[5]{x+4} = \sqrt[5]{3x-2}$</p> <p>$x = 3$ ✓</p>
<p>5. $\sqrt{x+6} - \sqrt{2x-4} = 0$ $(\sqrt{x+6})^2 = (\sqrt{2x-4})^2$ $x+6 = 2x-4$ $6 = x-4$ $x = 10$ ✓</p> <p>check 10 $\sqrt{10+6} - \sqrt{2 \cdot 10 - 4} = 0$ $\sqrt{16} - \sqrt{16} = 0$ $0 = 0$ ✓</p>	<p>6. $4\sqrt{x+1} = 3\sqrt{x+2}$</p> <p>$x = \frac{2}{7}$ ✓</p>
<p>7. $(\sqrt{x+18})^2 = (x-2)^2$ $x+18 = (x-2)(x-2)$ $x+18 = x^2 - 2x - 2x + 4$ $x+18 = x^2 - 4x + 4$ $x^2 - 5x - 14 = 0$ $(x+2)(x-7) = 0$ $x = -2$ & $x = 7$ ✓</p> <p>check (-2) $\sqrt{-2+18} = -2-2$ $\sqrt{16} = -4$ $4 \neq -4$ False</p> <p>check (7) $\sqrt{7+18} = 7-2$ $\sqrt{25} = 5$ $5 = 5$ ✓</p>	<p>8. $\sqrt{3x-11} = x-3$</p> <p>$x = 4$ & $x = 5$ ✓</p>

4A.3 - HWK - Solving Radical Equations

9. $(\sqrt{-x-1})^2 = (x+1)^2$
 $-x-1 = (x+1)(x+1)$
 $-x-1 = x^2+x+x+1$
 ~~$-x-1 = x^2+2x+1$~~
 $+x+1$
 $x^2+3x+2=0$
 $(x+1)(x+2)=0$
 $\boxed{x=-1}$ & ~~$x=2$~~

check(-1)
 $\sqrt{-(-1)-1} = -1+1$
 $\sqrt{1-1} = 0$
 $\sqrt{0} = 0$
 $0 = 0 \checkmark$
 check(-2)
 $\sqrt{-(-2)-1} = -2+1$
 $\sqrt{2-1} = -1$
 ~~$\sqrt{1} = -1$~~ False

10. $\sqrt{3x-11} = x-3$

$\boxed{x=4}$ & $\boxed{x=5}$

11. $[(2x+1)^3]^{1/3} = (2)^3$
 $2x+1 = 8$
 ~~$2x = 7$~~
 $\frac{2x}{2} = \frac{7}{2}$
 $\boxed{x = \frac{7}{2}}$ ✓

check (7/2)
 $[2(\frac{7}{2})+1]^{1/3} = 2$
 $(7+1)^{1/3} = 2$
 $(8)^{1/3} = 2$
 $2 = 2$

12. $(4x+5)^{1/2} = x$

~~$x=-1$~~ & $\boxed{x=5}$ ✓

13. $[2(x+1)^2]^{1/2} = (1)^2$
 $4(x+1) = 1$
 $4x+4 = 1$
 ~~$4x = -3$~~
 $\frac{4x}{4} = \frac{-3}{4}$
 $\boxed{x = -3/4}$ ✓

check (-3/4)
 $2[-\frac{3}{4}+1]^{1/2} = 1$
 $2(\frac{1}{4})^{1/2} = 1$
 $2(\frac{1}{2}) = 1$
 $1 = 1$

14. $(45-9x)^2 = x-5$

~~$x=4$~~ & $\boxed{x=5}$ ✓

15. ERROR ANALYSIS: Below are two solutions to the equation $2\sqrt{3x+3} = 12$. Which one is correct? Explain the error.

A correct ☺
 $2\sqrt{3x+3} = 12$
 $\sqrt{3x+3} = 6$
 $(\sqrt{3x+3})^2 = 6^2$
 $3x+3 = 36$
 $x = 11$

B
 $2\sqrt{3x+3} = 12$
 $2(\sqrt{3x+3})^2 = 12^2$
 $4(3x+3) = 144$
 $12x+12 = 144$
 $x = 23$
 You must square the 2
 $12x+12 = 144$
 ~~-12~~
 $12x = 132$
 $\frac{12x}{12} = \frac{132}{12}$
 $\boxed{x = 11}$