Name Key

Algebra 2:
5.4 Solving Radical Equations WS

Solve the radical equation. Remember to check for extraneous solutions!

1. $-8+\sqrt{5a-5}=-3$

$\sqrt{5a-5}=5$

$5a-5=25$

$5a=30$

$\boxed{a=6}$

2. $15+10\sqrt{7x-6}=75$

$10\sqrt{7x-6}=60$

$\sqrt{7x-6}=6$

$7x-6=36$

$7x=42$

$\boxed{x=6}$

3. $10+\sqrt[3]{4t-9}=13$

$\sqrt[3]{4t-9}=3$

$4t-9=27$

$4t=36$

$\boxed{t=9}$

4. $\sqrt[4]{7v+4}+5=8$

$\sqrt[4]{7v+4}=3$

$7v+4=81$

$7v=77$

$\boxed{v=11}$

5. $2-\sqrt{5n-6}=5$

$-\sqrt{5n-6}=3$

$5n-6=9$

$5n=15$

$n=3$

$\boxed{\text{no solution}}$

6. $4\sqrt[3]{3p+8}-2=-6$

$4\sqrt[3]{3p+8}=-4$

$\sqrt[3]{3p+8}=-1$

$3p+8=-1$

$3p=-9$

$\boxed{p=-3}$

7. $(3x+7)^{\frac{1}{4}}-3=1$

$(3x+7)^{1/4}=4$

$3x+7=256$

$3x=249$

$\boxed{x=83}$

8. $3(h+5)^{\frac{1}{3}}-6=0$

$3(h+5)^{1/3}=6$

$(h+5)^{1/3}=2$

$h+5=8$

$\boxed{h=3}$

9. Body surface area (BSA) is used to determine doses of medications. The formula is $BSA=\sqrt{\frac{H\cdot M}{3600}}$, where H is the height in centimeters and M is the mass in kilograms. A doctor calculates that a particular dose of medication is appropriate for an individual whose BSA is less than 1.8. If the mass of the individual is 72 kilograms, how many centimeters tall can she be for the dose to be appropriate?

$1.8=\sqrt{\frac{72H}{3600}}$

$3.24=\frac{72H}{3600}$

$H=162$

The individual must be 162 cm or less in height.

10. The half-life of a certain type of soft drink is 6 hours. If you drink 65 milliliters of this drink, the formula $y=65\,(0.6)^{\frac{t}{6}}$ tells the amount of the drink left in your system after t hours. How much of the drink will be left in y system after 4 hours?

$y=65\,(0.6)^{4/6}$

$y=65\,(0.7114)$

$y=46.241$

About 46.241 mL will be left in your system.