A.37 - Algebra II Name _____

SOLVE for the variable in each radical equation.

1. $\sqrt{2x-5}=7$

$2x-5=49$

$2x=54$

$\boxed{x=27}$

2. $\sqrt{2x-5}=-7$

No Solution

$\sqrt{\ }$ = positive #

3. $\sqrt[3]{3x-1}=-2$

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

$3x-1=-8$

$3x=-7$

$\boxed{x=-7/3}$

4. $\sqrt{2x-5}-2=3$

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

$2x-5=25$

$2x=30$

$\boxed{x=15}$

5. $\sqrt{1-2x}=\sqrt{3x-2}$

$1-2x=3x-2$

$1=5x-2$

$3=5x$

$x=\frac{3}{5}$ Extraneous Solution

$\sqrt{1-2(3/5)}=\sqrt{1-6/5}$

$=\sqrt{-1/5}$ Not Real

∴ No Solution

6. $\sqrt[4]{x-6}+5=3$

$\sqrt[4]{x-6}=-2$

No Real Solution

(even index ⇒ root should be positive)

7. $\frac{4x\sqrt{2}}{4}=\frac{14}{4}$

$x\sqrt{2}=\frac{7}{2}$

$x=\frac{7}{2\sqrt{2}}$

$x=\frac{7}{2\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\frac{7\sqrt{2}}{2\cdot 2}$

$\boxed{x=\frac{7\sqrt{2}}{4}}$

8. $2x\sqrt{3}-7=5$

$\frac{2x\sqrt{3}}{2}=\frac{12}{2}$

$\frac{x\sqrt{3}}{\sqrt{3}}=\frac{6}{\sqrt{3}}$

$x=\frac{6}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{6\sqrt{3}}{3}=\boxed{2\sqrt{3}}$

9. $2x-x\sqrt{6}=10$

$x(2-\sqrt{6})=10$

$x=\frac{10}{(2-\sqrt{6})}\cdot\frac{(2+\sqrt{6})}{(2+\sqrt{6})}$

$x=\frac{10(2+\sqrt{6})}{4-6}=\frac{10(2+\sqrt{6})}{-2}$

$\boxed{x=-5(2+\sqrt{6})}$

10. $x+4=x\sqrt{3}$

$4=x\sqrt{3}-x$

$4=x(\sqrt{3}-1)$

$x=\frac{4}{(\sqrt{3}-1)}\cdot\frac{(\sqrt{3}+1)}{(\sqrt{3}+1)}=\frac{4(\sqrt{3}+1)}{3-1}$

$x=\frac{4(\sqrt{3}+1)}{2}=\boxed{2(\sqrt{3}+1)}$