PREC11
Quiz5.3(F)

Name_____

Clearly show all work.

Solve each radical equation:

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

$-3 \quad -3$

$\sqrt{x+1}=2$

$(\sqrt{x+1})^2=2^2$

$x+1=4$

$\boxed{x=3}$

$x+1\geq 0$
$x\geq -1$

l.s. $\sqrt{x+1}+3$ r.s. 5

$\sqrt{3+1}+3$

$\sqrt{4}+3$

$2+3$

5 ✓

2. $x=\sqrt{x+10}+2$

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

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

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

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

$(x-6)(x+1)=0$

$\boxed{x=6, \cancel{-1}}$

$x+10\geq 0$
$x\geq -10$

l.s. x	r.s. $\sqrt{x+10}+2$
6	$\sqrt{6+10}+2$
	$\sqrt{16}+2$
	$4+2$
	6 ✓

x	$\sqrt{x+10}+2$
-1	$\sqrt{-1+10}+2$
	$\sqrt{9}+2$
	$3+2$
	5 ✗

3. $(\sqrt{3+w})^2=(2\sqrt{w-3})^2$

$3+w=4(w-3)$

$3+w=4w-12$

$15=3w$

$5=w$

$3+w\geq 0$
$w\geq -3$

$w-3\geq 0$
$\boxed{w\geq 3}$

l.s. $\sqrt{3+w}$ r.s. $2\sqrt{w-3}$

$\sqrt{3+5}$ $2\sqrt{5-3}$

$\sqrt{8}$ $2\sqrt{2}$

$2\sqrt{2}$ ✓

4. $\sqrt{4x+5}-\sqrt{2x-1}=2$

$\sqrt{4x+5}=2+\sqrt{2x-1}$

$(\sqrt{4x+5})^2=(2+\sqrt{2x-1})^2$

$4x+5=(2+\sqrt{2x-1})(2+\sqrt{2x-1})$

$4x+5=4+4\sqrt{2x-1}+2x-1$

$4x+5=3+2x+4\sqrt{2x-1}$

$2x+2=4\sqrt{2x-1}$

$(2x+2)^2=(4\sqrt{2x-1})^2$

$4x^2+8x+4=16(2x-1)$

$4x^2+8x+4=32x-16$

$4x^2-24x+20=0$

$4(x^2-6x+5)=0$

$4(x-5)(x-1)=0$

$x=5, 1$

$4x+5\geq 0$
$x\geq -\frac{5}{4}$

$2x-1\geq 0$
$\boxed{x\geq \frac{1}{2}}$

Check
l.s. $x=5$ ✓ r.s. $x=1$ ✓