

Clearly show all work.

Solve each radical equation:

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

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

$$x+1 = 4$$

$$x = 3$$

ch

$$\sqrt{3+1} + 3 \stackrel{?}{=} 5$$

$$\sqrt{4} + 3$$

$$2 + 3$$

$$5 = 5 \checkmark$$

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

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

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

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

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

$$x = 6, x = -1$$

ch

$$6 \stackrel{?}{=} \sqrt{6+10} + 2$$

$$\sqrt{16} + 2$$

$$4 + 2$$

$$6 = 6 \checkmark$$

$$-1 \stackrel{?}{=} \sqrt{-1+10} + 2$$

$$-1 = \sqrt{9} + 2$$

$$3 + 2$$

$$-1 \neq 5 \times$$

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

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

$$3+w = 4w-12$$

$$15 = 3w$$

$$w = 5$$

ch

$$\sqrt{3+5} \stackrel{?}{=} 2\sqrt{5-3}$$

$$\sqrt{8}$$

$$2\sqrt{2} = 2\sqrt{2} \checkmark$$

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

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

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

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

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

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

$$x^2 + 2x + 1 = 8x - 4$$

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

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

$$x = 1, x = 5$$

ch

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

$$\sqrt{9} - \sqrt{1} = 2$$

$$3 - 1 = 2$$

$$2 = 2 \checkmark$$

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

$$\sqrt{25} - \sqrt{9} = 2$$

$$5 - 3 = 2$$

$$2 = 2 \checkmark$$