Solving Radical Equations Continued (6.5)

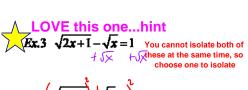
CHECK: Solve, Check for extraneous roots. $\sqrt{x+7}-5=x$ Ex. 1 $\sqrt{x+7} = 5 = x$ $\sqrt{(-3)+7}-5=(-3)$ $\sqrt{(-6)+7}-5=(-6)$ Isolate the radical first $\sqrt{4}-5=-3$ $\sqrt{1}-5=-6$ $\sqrt{x+7} = x+5$ 2-5=-3 $-3=-3\sqrt{}$ 1–5=–6 –4≠–6 $\left(\sqrt{x+7}\right)^{2} = \left(x+5\right)^{2}$ $x+7 = x^2 + 10x + 25$ Answer: $0 = x^2 + 9x + 18$ {-3} 0 = (x+3)(x+6)x+3=0 x+6=0**CHECK!** x = -3 or x = -6

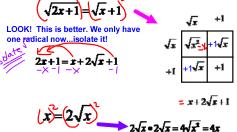
UGH! Two radicals Ex. 2 $\sqrt{x+5} = \sqrt{2x}$ But...each is isolated so it's easy!!

$$\left(\sqrt{x+5}\right) = \left(\sqrt{2x}\right)^2$$

$$x+5=2x$$

Should we bother to check? YES!!! Answer: $\{5\}$ $\sqrt{x+5} = \sqrt{2x}$ $\sqrt{5+5} = \sqrt{2(5)}$ $\sqrt{10} = \sqrt{10}$



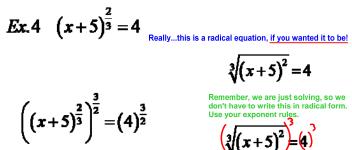


x²=4x Now, solve...how many possible answers?

x^z-4x=0 x(x-4)=0 x=0 or x-4=0 Should we check?

x=0 or x=4 ABSOLUTELY!! x=0 x=4

| x=0 | x=4 | |
|--------------------------------|--------------------------------|---------|
| $\sqrt{2x+1} - \sqrt{x} = 1$ | $\sqrt{2x+1} - \sqrt{x} = 1$ | |
| $\sqrt{2(0)+1} - \sqrt{0} = 1$ | $\sqrt{2(4)+1} - \sqrt{4} = 1$ | |
| √ 1−0=1 | $\sqrt{9} - 2 = 1$ | |
| 1-0=1 | 3-2=1 | x={0,4} |
| 1=1 🗸 | 1=1 | 1.60 |



$$x + 5 = (\sqrt{4})^{3}$$

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$$x + 5 = (\pm 2)^{3} \quad \text{or } x + 5 = \pm 8$$

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$$x = 3 \quad \text{or } x = -13$$

$$(x + 5)^{\frac{2}{3}} = 4 \quad (x + 5)^{\frac{2}{3}} = 4$$

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