Radical Equations Lesson

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What is a radical equation?

- A radical equation is a equation which has a variable inside the radical sign √
- Some types of radical equations include…

$\sqrt{x}+3 = 10$

$\sqrt{6q} = \sqrt{7q-2}$

$\sqrt{2c+8} = 2c-6$

Are these examples of radical equations??

$\sqrt{2x} + 5 = 13$

Yes

$\sqrt{4x + 52} = 2x + 1$

Yes

$\sqrt{4x + 24}$

No

How do you solve a radical equation???

- Solving a radical equation is fairly simple. Follow these steps and be able to solve any radical equation of your choice!!!! Look at this radical equation being solved.

$$\sqrt{-9x}=27$$

1st step: Isolate the radical sign

- In this example, the radical sign is already isolated.

$$\sqrt{9x}=27$$

2nd Step: Square both sides of the equation

- By squaring both sides of the equation, it will remove the radical sign. Hence, it will be easier to solve the problem

$$(\sqrt{9x})^2 = 27^2$$

3rd step: the radical equation now looks like a regular one

$$9x = 729$$

4th step: Solve

$$9x = 729$$

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$$x = 81$$

5th step: check

1st step: replace x with the answer

$$\sqrt{9(81)} = 27$$

2nd step: solve what is inside the radical sign

$$\sqrt{729} = 27$$

3rd step: See if the answer is the same on both sides. If it is then you are correct

$$27=27$$

Another example

Step 1: Isolate the radical sign

$$\sqrt{x+10}-1=x+3$$
$$\quad +1 \qquad\quad +1$$

Step 2: Square both sides

$$\left(\sqrt{x+10}\right)^2=(x+4)^2$$

Step 3: Solve the quadratic equation

$$x+10 = x^2+8x+16$$
$$-x-10 \qquad\qquad -x-10$$

Step 4: Use factoring to find the two zeros

$$0 = x^2+7x+6$$

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

Same example

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

$$x+6=0 \ \ \& \ x+1=0$$

$$x=-6 \ \ \text{and} \ x=-1$$

Step 5:Check by putting both answers instead of x

$\sqrt{-6+10}-1=-6+3$

$\sqrt{4}-1$ = -6+3

$\sqrt{4}$ = 4

2=4 (x)

X does not equal -6

$\sqrt{-1+10}-1=-6+3$

$\sqrt{9}-1$ = -1+3

$\sqrt{9}=3$

3=3 (yes)

X does equal -1

Answer: x = -1

Contact us if you have any other questions at

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