

Name: _____ Date: _____ Period: _____

6-5 Solving Square Root and Other Radical Equations Part 1

Standards

A2.A.REI.D.6 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the approximate solutions using technology.

A2.A.REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

A2.A.REI.A.2 Solve rational and radical equations in one variable and identify extraneous solutions when they exist.

A2.A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and rational and exponential functions.

A2.A.CED.A.2 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Key Concepts

_____ - an equation that has a variable in a radicand or has a variable with a rational exponent.

It is possible to get extraneous solutions for square root and other radical equations, so

_____.

Examples

(I do) Solve.

1. $-10 + \sqrt{2x + 1} = -5$ 2. $3(x + 1)^{\frac{3}{5}} = 24$ 3. $3(x + 1)^{\frac{2}{3}} = 12$

6. (They do) For the meteor crater in Arizona, the formula $d = 2\sqrt[3]{\frac{V}{0.3}}$ relates the diameter d of the rim (in meters) to the volume V (in cubic meters). What is the volume of the Meteor Crater if the diameter is 1.2 m?

6-5 Solving Square Root and Other Radical Equations Part 2

(We do) Solve. Check for extraneous solutions.

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

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

You do: Practice 6-5: Complete your assignment on a separate sheet of paper. Show all work.

1. Solve.

a. $\sqrt{x+2} - 2 = 0$

b. $\sqrt{2x+3} - 7 = 0$

c. $2 + \sqrt{3x-2} = 6$

2. Solve.

a. $2(x-2)^{\frac{2}{3}} = 50$

b. $(6x-5)^{\frac{1}{3}} + 3 = -2$

3. Solve. Check for extraneous solutions.

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

b. $\sqrt{-3x-5} - 3 = x$

4. A cylindrical can holds 28 in.³ of soup. If the can is 4 in. tall, what is the radius of the can to the nearest tenth of an inch? (*Hint: $V = \pi r^2 h$*)

5. **Reasoning.** If you are solving $4(x+3)^{\frac{3}{4}} = 7$, do you need to use the absolute value to solve for x ? Why or why not?

6. Find the solutions of $\sqrt{x+2} = x$, are there any extraneous solutions? How do you know?