Assignment

Write

Explain in your own words why it is important to check all solutions when solving radical equations.

Remember

Strategies to solve equations using the Properties of Equality to isolate the term containing the unknown are applicable when solving radical equations. Increasing the power of the variable during the solution process may introduce extraneous solutions.

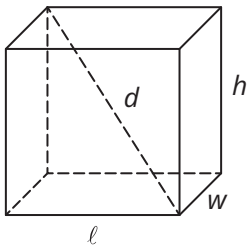
Practice

1. Analyze Jackson's incorrect work. Identify the error(s) and correctly solve the radical equation.

Jackson

$$\sqrt[3]{2x - 5} = 5$$
$$\left(\sqrt[3]{2x - 5}\right)^3 = (5)^3$$
$$2x^3 - 5^3 = 125$$
$$2x^3 - 125 = 125$$
$$2^3 = 250$$
$$x^3 = 125$$
$$x = 5$$

2. Solve $x + \sqrt{x} - 9 = -3$ and check your solution.
3. Solve $9.7x^{\frac{2}{3}} = 38.8$ and check your solution.
4. The length, d, of the diagonal in a right rectangular prism can be determined using the equation $d = \sqrt{\ell^2 + w^2 + h^2}$, where ℓ represents the length, w represents the width, and h represents the height. Determine the height of a right rectangular prism with a length of 8 inches, a width of 4 inches, and a diagonal length of 12 inches. Check your solution.



Stretch

1. Solve $\sqrt{3x + 1} = 4 - \sqrt{5 - x}$ and check your solution.
2. Consider the functions $f(x) = x^{\frac{1}{2}}$ and $g(x) = \left(\frac{1}{2}\right)^x$ for $x \geq 0$.
   a. Complete the table of values for the functions.
   b. Sketch the graph of both functions.
   c. Determine the domain and range for each graph. Explain your reasoning.

x	$f(x) = x^{\frac{1}{2}}$	$g(x) = \left(\frac{1}{2}\right)^x$
−2		
−1		
0		
1		
2		
4		

Review

1. Rewrite each expression by extracting all possible roots.
   a. $\sqrt[3]{54x^5y^{12}}$ b. $\sqrt{44a^3b^7}$
2. Rewrite $-2\sqrt{y^2} + 10\sqrt[3]{y^2} - 12\sqrt[3]{y^2} + 8\sqrt{y^2}$ with the fewest terms possible.
3. Yoon is going to sell T-shirts at a concert. Company A tells her it will cost \$300 up front and \$4.50 per shirt. Company B tells her it will cost \$250 up front and \$4.00 per shirt.
   a. Write a function to represent the average cost per T-shirt for the two companies.
   b. Which company will have a lower average cost per T-shirt if she plans on getting 200 T-shirts made? Show all of your work and explain your reasoning.
4. Identify the number of complex zeros for the polynomial equation $x^5 + x^4 + x^3 + x^2 - 12x - 12 = 0$. Explain your reasoning