

7.6 - Solving Radical Equations

Note Title

A Radical Equation contains _____ in the _____.

The Principle of Powers If $a = b$, then $a^n = b^n$ for any exponent n .

Notice the "if-then" relationship here

Examine

$$x = 3 \Rightarrow x^2 = 9$$

* We must check for

① Solve $\sqrt{x} - 5 = 4$ (Algebraically & Graphically)

To Solve an Equation with a Radical Term

1. Isolate the radical term on one side of the equation.
2. Use the principle of powers and solve the resulting equation.
3. Check any possible solution in the original equation.

② Solve $\sqrt{x} + 5 = 2$

③ Solve $\sqrt{x-2} - 7 = -4$

④ Solve $x = \sqrt{x-1} + 3$

To Solve an Equation with Two or More Radical Terms

1. Isolate one of the radical terms.
2. Use the principle of powers.
3. If a radical remains, perform steps (1) and (2) again.
4. Solve the resulting equation.
5. Check possible solutions in the original equation.

⑤ Solve

$$a) \sqrt{x+2} + \sqrt{3x+4} = 2$$

$$b) \sqrt{6x+7} - \sqrt{3x+3} = 1$$

⑥ For the given functions, find the values of t

a) $f(t) = \sqrt{t-2} - \sqrt{4t+1}$, $f(t) = -3$

b) $g(t) = \sqrt{t} + \sqrt{t-9}$, $g(t) = 1$