

6.7 Solving Equations with nth Roots and  
Solving Radical Equations  
Honors Algebra 2

1. Solve the following equations:

a.  $-2x^6 = -1458$

b.  $x^3 - 9 = 31$

c.  $12 - (x + 3)^3 = 84$

**Radical Equation:** an equation with radicals that have variables in their radicands. Solve within the set of REAL NUMBERS!

**Case #1:** The variable is not under the radical and is in two separate terms.

- Move the terms with the variable to one side
- Factor out  $x$
- Divide by the Coefficient
- Rationalize the denominator
- Check Solutions

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

3.  $x\sqrt{3} = 3x + 5$

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**Case #2:** One variable and is IN the radical

- Isolate the term with the radical
- Undo the radical operation - INVERSE!
- Solve for the variable
- Check the solutions

4.  $\sqrt{2b+2} - 3 = -15$

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

6.  $x^4 + 81 = 0$

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**Case #3:** The variable is IN TWO separate radicals

- Separate the radical terms to opposite sides of the equation
- Undo the radical operation (square both sides)
- Isolate the remaining radical term
- Undo the radical operation - INVERSE!
- Solve for the variable
- Check Solutions

7.  $\sqrt{x+1} - \sqrt{3x} = -1$

8.  $\sqrt{x+10} = 8 - \sqrt{x-6}$