8.5 Solving Radical Equations

A. Using the Squaring Property

Rules:
1. If $\sqrt{x} = a$ then $x = a^2$ and
2. If $x = a$ then $x^2 = a^2$

Steps:
1. Arrange terms so that one radical is by itself on one side of the equation.
2. Square both sides of the equation.
3. Simplify both sides of the equation.
4. If the equation still contains a radical term, repeat steps 1 through 3.
5. Solve the resulting equation.
6. Check all possible solutions in the original equation for extraneous solutions.

Example 1. Solve:

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

2. $\sqrt{y - 2} + 5 = 0$

3. $\sqrt{x + 3} - x = -3$
4. \(\sqrt{x + 4} = \sqrt{2x + 1}\)

5. \(\sqrt{9y^2 + 2y - 10} = 3y\)

6. \(\sqrt{x - 5} = \sqrt{x - 35}\)