College Algebra

Sections 4.8

Radical Equations and Power Functions

In this section we solve a variety of equations, all of which reduce to linear or quadratic in form. As a reminder, those forms are:

\[ ax + b = 0 \quad \text{Linear} \]
\[ ax^2 + bx + c = 0 \quad \text{Quadratic} \]

The methods for solving these types of equations have already been discussed.

Students must be familiar with rational exponents and radical notation. Please review p 341 as needed.

Radical Equations

These are equations that contain radicals, like \( \sqrt[3]{x^2 + 4} \). It is very important we understand the domain of these equations and which values from the real numbers are restricted, if any.

An illustration

Example: Solve the following radical equations:

(a) \( 2x = \sqrt{21-5x} \)  \quad (b) \( \sqrt{4-3x} = x + 8 \)  \quad (c) \( \sqrt[3]{z+1} = -3 \)

Equations Involving Rational Exponents, Quadratic Forms
Example: Solve \( 3x^{3/2} + 4 = 85 \)

Example: Solve \( 8n^{-2} + 14n^{-1} = 15 \)

Example: Solve \( 3z^{2/3} - z^{1/3} - 2 = 0 \)

**Power Functions**

**Form:** \( f(x) = x^b \) where \( b \) is a constant.

Keplers Law handout: