Algebra 2 Unit: Exponential and Logarithmic Functions Section: Solving Exponential and Logarithmic Equations

Example: Solving Logarithmic Equations

Problem

Solve log of x plus log of the quantity x minus three is equal to one.

Solution

Use the Product Property of Logarithms to combine into one log.

Log of the quantity x times the quantity x minus three is equal to one.

Simplify. Log of the quantity x squared minus three x is equal to one.

Rewrite as an exponential function. X squared minus three x is equal to ten to the first power.

Subtract ten from both sides. X squared minus three x minus ten is equal to zero.

Factor the quadratic. The quantity x minus five times the quantity x plus two is equal to zero.

Solve for x. x is equal to five or x is equal to negative two.

You can discard x is equal to negative two as a solution since negative two will not be defined in the equation.