

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

Example: Solving Logarithmic Equations

Problem

Solve $\log x + \log(x - 3) = 1$.

Solution

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

$\log(x(x - 3)) = 1$.

Simplify. $\log(x^2 - 3x) = 1$.

Rewrite as an exponential function. $x^2 - 3x = 10^1$.

Subtract ten from both sides. $x^2 - 3x - 10 = 0$.

Factor the quadratic. $(x - 5)(x + 2) = 0$.

Solve for x . $x = 5$ or $x = -2$.

You can discard $x = -2$ as a solution since negative two will not be defined in the equation.