L5 – 7.4 – Solving Logarithmic Equations
MHF4U

Part 1: Try and Solve a Logarithmic Equation

Solve the equation $\log(x+5) = 2\log(x-1)$

Hint: apply the power law of logarithms to the right side of the equation

Note:

If $\log_m a = \log_m b$, then $a = b$.

Part 1: Solve Simple Logarithmic Equations

To complete this lesson, you will need to remember how to change from logarithmic to exponential:

$y = \log_b x \rightarrow$

Example 2: Solve each of the following equations

a) $\log(x+4) = 1$

Method 1: re-write in exponential form

Method 1: express both sides as a logarithm of the same base

b) $\log_5(2x-3)=2$

Part 2: Apply Factoring Strategies to Solve Equations

Example 3: Solve each equation and reject any extraneous roots

a) $\log(x-1)-1=-\log(x+2)$

b) $\log \sqrt[3]{x^2 + 48x} = \frac{2}{3}$

c) $\log_3 x - \log_3 (x - 4) = 2$

Example 4: If $\log_a b = 3$, then use log rules to find the value of…

a) $\log_a ab^2$

b) $\log_b a$

Hint: need to change the base

$\log_b m =$