

8.6 Solving Logarithmic Equations

Remember, both the base ($b \neq 1$) and the argument of a logarithm must be positive.

$$y = \log_a x$$

Diagram labels:
 - y : Exponent
 - a : Base
 - x : Argument

- Ex. 1 i) State the restrictions on the variable x .
 ii) Solve the following equations. Identify and reject any extraneous (inadmissible) roots.

Simple Log Equations – Changing to Exponential Form

a) $\log_3(4x+3)=3$

$\log_x 16=4$

Apply the Logarithmic Laws

If $\log_b x = \log_b y$, then $x = y$

a) $\log_5(x+2)=2\log_5 x$

b) $\log_2(x+2)+\log_2(x+1)=1$

$$\text{c) } \log(x-1) - 1 = -\log(x+2)$$

$$\text{d) } \log_5(x-1) - \log_5(x+2) = 2$$

Ex. 2 True or False?

$$\text{a) } \log_5(-20) + \log_5(5) = \log_5(-100)$$

$$\text{b) } -\log 10 + \log 2 = -\log 5$$

