

Pre-Calculus 12 Solving Logarithmic Equations

Steps:

1. Move all logs on one side and leave the constant (or 0) on other side. If all terms have logs, no need to isolate.
2. Combine all logs into a single log using log laws.
3. Change to exponential form.
4. Solve.
5. Check your solution, extraneous root may exist.
 - Logs are only defined for positive (+) arguments, if a solution yields a negative (-) argument, reject that solution.

$$y = \log_b x$$

Ex. 1) Solve

a) $\log_3(2x) = \log_3(x + 5)$

b) $\log_3(9x) + \log_3x = 4$

c) $\log_5(3x + 1) + \log_5(x - 3) = 3$

$$\text{d) } \log(6x) = \log(x + 6) + \log(x - 1)$$

$$\text{e) } \ln(x + 1) = 1 + \ln x$$