SOLVING LOGARITHMIC EQUATIONS: GUIDED NOTES

Properties of Logarithms

Product Property: $\log_b(m \cdot n) = \log_b(m) + \log_b(n)$

Quotient Property: $\log_b\left(\dfrac{m}{n}\right) = \log_b(m) - \log_b(n)$

Power Property: $\log_b(m^p) = p \cdot \log_b(m)$

Change of Base: $\log_b a = \dfrac{\log a}{\log b} = \dfrac{\ln a}{\ln b}$

Examples

Solve each of the following equations.

1) $\log_7(x+7) + \log_7(x+1) = 1$

2) $\log_2(x^2+10) - \log_2(7) = 1$

3) $\log_3(5-3x) = \log_3(4x-9)$