

Solving Logarithmic and Exponential Equations

PART TWO

DAY 6

	Exponential Equations	Logarithmic Equations
Re-writing/Converting		
Same Bases (equating exp/logs)		
Similar Bases (changing the bases)		
Different bases (difficult!)		
Using exp/log properties		
Applications (Interest)		

1. Changing the logarithmic base:

a) $\log_2(x + 1) - \log_4(x) = 1$

b) $\log_2(3x + 2) - \log_4 x = 3$

2. Exponential Equations:

a) $2^{2x} - 2^x - 12 = 0$

b) $\left(\frac{6}{5}\right)^x = \left(\frac{1}{2}\right)^{-x}$

3. Properties: Condense and expand.

a) $2\log_3 5 + 4\log_3 a + \frac{1}{2}\log_3 b$

b) $\log_4 \left(\frac{(a - 1)^2 b}{a^3 (b + 3)^5} \right)$

4. Rewrite Bases:

$$(a) \quad \left(\frac{4}{7}\right)^{x+2} = \left(\frac{16}{49}\right)$$

$$(b) \quad \left(\frac{8}{27}\right)^{5x} = \left(\frac{4}{9}\right)$$

5. Equations with Radicals:

$$a) \quad 2^x = 32\sqrt{2}$$

$$b) \quad 3^x = 27\sqrt{3}$$

