

4.5
1/2

## Log and Exponential Equations.

Our Tools :  $\left\{ \begin{array}{l} \text{Exponent Rules} \\ \text{Log Rules} \\ \text{Bob, " } y = b^x \Leftrightarrow x = \log_b(y), b > 0 \text{ \& } b \neq 1 \end{array} \right.$

$$1) \log_{64} \left( \frac{x}{32} \right) = \frac{3}{2}$$

$$2) \log_4 (x^2) = -2$$

$$3) \log_x (27) = -3 \quad (\text{find the base}).$$

$$4) \log_2 (x^2 + 5x + 10) = 4$$

$$5) 5^x = 3$$

$$6) 2^{x^2 - x} = 4 \quad (\text{quadratic formula}).$$

$$7) 5^{x^2 - x} = 7$$

$$8) \log_2 (x+4) + \log_2 (x+2) = \log_2 (3)$$

$$9) 3^{x+1} = 9^x \cdot 27^{x+1}$$

$$10) 5^x + 12 \cdot 5^{-x} = 7 \quad (\text{quadratic in disguise}).$$

4.5
2/2

$$11) \log(10x+5) - \log(x+4) = \log(2)$$

$$12) \ln(\ln(\ln(x+6))) = 0$$

$$13) 10^{2x+1} = 4^{x-1}$$

$$14) \log_x(16) = 3 \quad (\text{Find the base})$$

$$15) \ln(x^4) = (\ln(x))^3$$

$$16) \text{ solve } e^{nt} = 2 \text{ for } t, \quad (\text{Doubling Time}).$$

$$17) \text{ Find } \sinh^{-1}(x) \text{ and } \cosh^{-1}(x).$$