SOLVING EXPONENTIAL EQUATIONS: GUIDED NOTES

Notation

Common Logarithm

$$\log_{10} x = \log x$$

Natural Logarithm

$$\log_e x = \ln x$$

(where e is Euler's number: $2.7...$)

Inverse Operations: Exponential and Logarithmic

$$10^{\log(x)} = x$$

$$\ln\left(e^x\right) = x$$

$$2^{\log_2 x} = x$$

$$\log_5\left(5^x\right) = x$$

Examples

Solve each of the following equations.

1) $3^{x-7} = 27^{2x}$

2) $4 - 2e^x = -23$

3) $10^{-12x} + 6 = 100$

Change of Base

$$\log_b a = \frac{\log a}{\log b}$$

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Use the change of base formula to rewrite the logarithmic expression below.

4) $\log_3 10 =$