

### 3.4 Solving Exponential Equations

Property I: If  $a^x = a^y$  then  $x = y$ .

Ex. ① Solve:  $4^x = 32$

Ex. ② Solve:  $27^x = 3x^2 - 4$

Property II: If  $x = y$  then  $\log_a(x) = \log_a(y)$

Ex. ③ Solve:  $4^x = 3$

Ex. ④ Solve:  $e^x = 7$

Ex. ⑤ Solve:

$$10^{x+1} + 3 = 8$$

Ex. ⑥ Solve:

$$2^x = 5^{2x+1}$$

### 3.4 Solving Logarithmic Equations

Property III: If  $\log_a x = y$  then  $x = a^y$

Ex. ⑦ Solve:

$$2 \log x + 7 = 207$$

Ex. ⑧ Solve:

$$\log x + \log(x-3) = 1$$



Property IV:

If  $\log_a x = \log_a y$  then  $x = y$ .

Ex. ⑨ Solve:

$$2 \ln x - \ln 2 = \ln(x+4)$$