

# Pre-Calculus 12 Solving Exponential Equations

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**Steps (Without a Common Base):**

1. Apply logarithms to both sides.
2. Apply the laws of logarithms.
3. Solve for  $x$
4. Evaluate logs with calculator  
(last step only)

**Ex. 1)** Solve for  $x$ :

a)  $4^x = 12$

b)  $2(3^x) = 5$

c)  $3^{x+1} = 6^x$

d)  $19^{x-5} = 3^{x+2}$