

## Mathematics – Exponential- / Logarithmic Function - Exercises - Solutions

01 Logarithmic form:

**Express in logarithmic form:  $a^b = c$**

- a)  $\log_a c = b$
- b)  $\log_b a = c$
- c)  $\log_c a = b$
- d)  $\log_a b = c$
- e) None of the above

Solution:

From the definition of exponential function and logarithm we have:

$$a = b^x \Leftrightarrow x = \log_b a$$

$$a = b^{\log_b a}$$

$$x = \log_b b^x$$

$$a^b = c \Leftrightarrow \log_a a^b = \log_a c \Leftrightarrow \underline{b = \log_a c} \quad \underline{a}$$

Video

02 Exponential form:

**Express in exponential form:  $\log_{27} 81 = \frac{4}{3}$**

- a)  $81^{3/4} = 27$
- b)  $81^{4/3} = 27$
- c)  $27^{4/3} = 81$
- d)  $27^{3/4} = 81$
- e) None of the above

Solution:

From the definition of exponential function and logarithm we have:

$$a = b^x \Leftrightarrow x = \log_b a$$

$$a = b^{\log_b a}$$

$$x = \log_b b^x$$

$$\log_{27} 81 = \frac{4}{3} \Leftrightarrow 27^{\log_{27} 81} = 27^{\frac{4}{3}} \Leftrightarrow \underline{81 = 27^{\frac{4}{3}}} \quad \underline{c}$$

Video