

تهیه و تنظیم:
مهندس رضایی
۰۹۳۹۷۸۹۸۹۰۷

<http://teachingriazi20.blogfa.com>

<https://telegram.me/riazee>

لگاریتم

تعريف:

$$(b \neq 1, b > 0, a > 0) \quad \log_b^a = c \iff a = b^c$$

قوانين لگاریتم:

$$1) \quad \log_c^{ab} = \log_c^a + \log_c^b$$

$$2) \quad \log_c^{a/b} = \log_c^a - \log_c^b$$

$$3) \quad \log_{b^n}^a = \frac{m}{n} \log_b^a \Rightarrow \left\{ \begin{array}{l} 4) \quad \log_b^{a^m} = m \log_b^a \xrightarrow{\frac{1}{a} = a^{-1}} 5) \quad \log_b^{\frac{1}{a}} = -\log_b^a \\ 6) \quad \log_{b^n}^a = \frac{1}{n} \log_b^a \\ 7) \quad \log_{\sqrt[n]{b}}^a = \frac{n}{m} \log_b^a \\ 8) \quad \log_{b^m}^{a^k} = \log_b^a = \log_{\sqrt[k]{b}}^a \\ 9) \quad \log_{\sqrt[k]{b}}^a = \log_b^a \end{array} \right.$$

$$10) \quad \log_b^a = \frac{\log_c^a}{\log_c^b} \Rightarrow \left\{ \begin{array}{l} 11) \quad \log_b^a \times \log_c^b = \log_c^a \\ 12) \quad \log_b^a \times \log_a^b = 1 \Rightarrow 13) \quad \log_b^a = \frac{1}{\log_a^b} \end{array} \right.$$

$$14) \quad a^{\log_c^b} = b^{\log_c^a} \Rightarrow 15) \quad a^{\log_a^b} = b$$

$$16) \quad \log_a^a = 1 \Rightarrow 17) \quad \log_a^{\log_a^b} = b$$

$$18) \quad \log_a^1 = 0$$