

EL LOGARITMO Y SUS PROPIEDADES

Sea $0 < a$, $a \neq 1$ y $0 < x$

$$y = \log_a x \quad \text{sii, por definición,} \quad x = a^y$$

Sean $0 < a$, $0 < b$, $a \neq 1$, $b \neq 1$, $0 < x$, $0 < y$, $m \neq 0$, $n \neq 0$, $0 < mn$, $r \neq 0$

1. $\log_b x = \frac{\log_a x}{\log_a b}$

2. $\log_b a = \frac{1}{\log_a b}$

3. $\frac{\log_b x}{\log_b y} = \frac{\log_a x}{\log_a y}$

4. $\log_a(xy) = \log_a x + \log_a y$

5. $\log_a\left(\frac{x}{y}\right) = \log_a x - \log_a y$

6. $\log_a x^c = c \log_a x$

7. $\log_{a^d} x^c = \frac{c}{d} \log_a x$

8. $\log_a(mn) = \log_a |m| + \log_a |n|$

9. $\log_a\left(\frac{m}{n}\right) = \log_a |m| - \log_a |n|$

10. $\log_a m^{2c} = 2c \log_a |m|$

11. $\log_{r^{2d}} m^{2c} = \frac{c}{d} \log_{|r|} |m|$