

## Log/Função Logarítmica

$$\text{Log}_a b \rightarrow \boxed{\text{Log}_a b = x} \rightarrow a^x = b$$

Exemplo:  $\text{Log}_3 9 = x \rightarrow 3^x = 9$   
 $3^x = 3^2$   
 $x = 2$

**Importante:** Logaritmo de base 10 -> podemos omitir a base.  $\text{Log}_{10} b = \text{Log } b$

$$\text{Log}_a a = 1$$

$$\text{Log}_a 1 = 0$$

$$\text{Log}_a b = \text{Log}_a c \rightarrow b = c$$

$$\text{Log}_a b = b \xrightarrow{\text{Exemplo}} 4 \text{Log}_4 3 = 4$$

$$\text{Log}_a a^n = n$$

### Propriedades Operatórias

$$\text{Log}_a (b \cdot c) = \text{Log}_a b + \text{Log}_a c \xrightarrow{\text{Exemplo}} \text{Log}_6^{12} = \text{Log}_6^{3 \cdot 4} = \text{Log}_6^3 + \text{Log}_6^4$$

$$\text{Log}_a (b/c) = \text{Log}_a b - \text{Log}_a c \xrightarrow{\text{Exemplo}} \text{Log}_7^6 = \text{Log}_7^{12/2} = \text{Log}_7^{12} - \text{Log}_7^2$$

$$\text{Log}_a b^n = n \cdot \text{Log}_a b \xrightarrow{\text{Exemplo}} \text{Log}_2^{3^7} = 7 \cdot \text{Log}_2^3$$

Mudança de Base

$$\text{Log}_a b = \frac{\text{Log}_c b}{\text{Log}_c a}$$

## Função Logarítmica

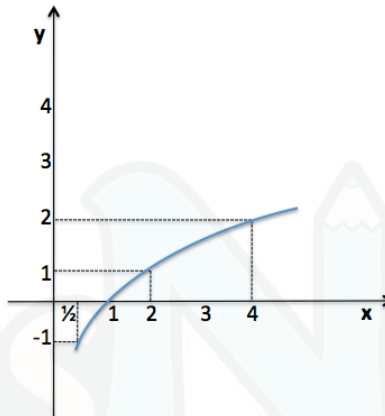
$$F(x) = \text{Log}_a x$$

Exemplo

$$Y = \text{Log}_2 x \rightarrow 2^y = x$$

Substituir x e calcular y

x	y
1	0
2	1
4	2
1/2	-1



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