

## LOGARITMOS

DEFINICIÓN

Tipos

$$\log_a x = y \Leftrightarrow a^y = x$$

$$x > 0 ; a > 0 ; a \neq 1$$

$$\log_{10} A = \log A \text{ (decimal)}$$

$$\log_e A = \ln A \text{ (neperiano)}$$

PROPIEDADES

Para  $n < 0$  (negativo) el  
 $\log_a n \rightarrow$  no existe

$\log_a 0 \rightarrow$  no existe

Cambio de base

$$\log_a N = \frac{\log_b N}{\log_b a}$$

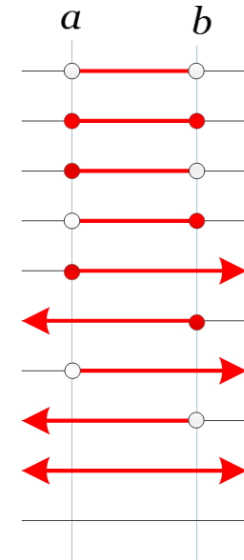
- $\log_a (u \cdot v) = \log_a u + \log_a v$
- $\log_a \left( \frac{u}{v} \right) = \log_a u - \log_a v$
- $\log_a u^n = n \cdot \log_a u$
- $\log_a \sqrt[n]{u} = \frac{1}{n} \log_a u$
- $\log_a 1 = 0 ; \log_a a = 1$
- $\log_a a^n = n$

$$\log 2 = 0,3010 ; \log 3 = 0,4771 ; e = 2,7182818\dots$$

$$\ln 10 = 2,302585 ; \log e = 0,434294$$

## INTERVALOS

|                    |                     |                           |
|--------------------|---------------------|---------------------------|
| Abierto            | $(a, b)$            | $\{x : a < x < b\}$       |
| Cerrado            | $[a, b]$            | $\{x : a \leq x \leq b\}$ |
| Semiabierto        | $[a, b)$            | $\{x : a \leq x < b\}$    |
| Semicerrado        | $(a, b]$            | $\{x : a < x \leq b\}$    |
| Semirrecta cerrada | $[a, \infty)$       | $\{x : x \geq a\}$        |
| Semirrecta cerrada | $(-\infty, b]$      | $\{x : x \leq b\}$        |
| Semirrecta abierta | $(a, \infty)$       | $\{x : x > a\}$           |
| Semirrecta abierta | $(-\infty, b)$      | $\{x : x < b\}$           |
| Recta real         | $(-\infty, \infty)$ | $\mathbb{R}$              |
| Conjunto vacío     |                     | $\{\emptyset\}$           |



## VALOR ABSOLUTO

DEFINICIÓN

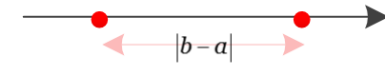
$$|a| = \begin{cases} +a & \text{si } a \geq 0 \\ -a & \text{si } a < 0 \end{cases}$$

PROPIEDADES

- $|a| \geq 0$
- $|a| = |-a|$
- $|a + b| \leq |a| + |b|$
- $|a \cdot b| = |a| \cdot |b|$

$$d(a, b) = |b - a| = |a - b|$$

DISTANCIA en la recta real



Siendo

$a > 0$

