TEOREMA 6. - (DI DARBOUX (1842-1917))

$$f \text{ CONTINUA IN } I \text{ INTERVALLO} \Longrightarrow \left[\begin{array}{l} \forall [a,b] \subseteq I, \\ \forall \lambda \in \left] \inf\limits_{[a,b]} f(x), \sup\limits_{[a,b]} f(x) \right[, \\ \exists c \in [a,b] : f(c) = \lambda \end{array} \right]$$

DIM.

$$\inf_{[a,b]} f(x) < \lambda < \sup_{[a,b]} f(x) \Longrightarrow \exists a_1, b_1 \in [a,b] :$$

$$: \inf_{[a,b]} f(x) \leq f(a_1) < \lambda < f(b_1) \leq \sup_{[a,b]} f(x)$$

$$\Longrightarrow \varphi(a_1) = f(a_1) - \lambda < 0 < f(b_1) - \lambda = \varphi(b_1)$$

$$\Longrightarrow \exists c \in]a_1, b_1[: 0 = \varphi(c) = f(c) - \lambda$$

$$\Longrightarrow f(c) = \lambda$$

$\square$

BUONOCORE

TEOREMA 7. - (DI BOLZANO (1781-1848))

$$f \text{ CONTINUA IN } I \text{ INTERVALLO} \Longrightarrow f(I) \text{ INTERVALLO}$$

DIM.

DAL TEOREMA 6 CON $[a,b] = I$

$\square$