(13) $f: D^n \setminus \partial D^n \to D^n$ può non avere un punto fisso, $n \in \mathbb{N}$

$$D^n = \left\{x = (x^1, \dots, x^n) \in \mathbb{R}^n \,\middle|\, \sum_{i=1}^{n} (x^i)^2 \leq 1\right\}$$

$$D^n \setminus \partial D^n = \left\{x = (x^1, \dots, x^n) \in \mathbb{R}^n \,\middle|\, \sum_{i=1}^{n} (x^i)^2 < 1\right\}$$

$f: \mathbb{R}^n \to \mathbb{R}^n$ continua $\not\Rightarrow \exists\, x_0 \in \mathbb{R}^n \mid f(x_0) = x_0$ (e.g. traslazioni)

$D^n \setminus \partial D^n \overset{\text{omeo}}{\cong} \mathbb{R}^n \implies$ non vale nemmeno per $D^n \setminus \partial D^n$

e.g.: $f: D^n \setminus \partial D^n \to D^n$ non ha punto fisso

$x \mapsto \dfrac{x + (1,0,\dots,0)}{2}$ perche $(1,0,\dots,0) \notin D^n \setminus \partial D^n$