⑧ $\mathbb{R}^2 \not\cong \mathbb{R} \times [0, \infty)$

assurdo: $\mathbb{R}^2 \overset{\text{omeo}}{\cong} \mathbb{R} \times [0, \infty) \implies \mathbb{R}^2 \setminus \{0\} \cong (\mathbb{R} \times [0, \infty)) \setminus \{(0,0)\}$ omeomorfi

$\implies \mathbb{R}^2 \setminus \{0\} \simeq (\mathbb{R} \times [0, \infty)) \setminus \{(0,0)\}$ omotopi

$\implies \pi_1(\mathbb{R}^2 \setminus \{0\}) \cong \pi_1((\mathbb{R} \times [0, \infty)) \setminus \{(0,0)\})$ isomorfi

ma $\begin{cases} \pi_1(\mathbb{R}^2 \setminus \{0\}) \cong \mathbb{Z} \\ \pi_1((\mathbb{R} \times [0, \infty)) \setminus \{(0,0)\}) \cong \{e\} \end{cases}$ ← assurdo

$\implies \mathbb{R}^2 \overset{\text{omeo}}{\not\cong} \mathbb{R} \times [0, \infty)$