② $\lim_{(x,y)\to(0,0)} \sin(xy)\left(\frac{2y^4+x^5}{(y^2+x^2)^2}\right)$

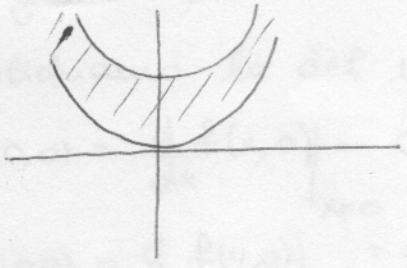
$$\left|\sin(xy)\ \frac{2y^4+x^5}{y^4+x^4+2x^2y^2}\right| \le |\sin(xy)|\,(2+|x|) \longrightarrow 0 \quad (x,y)\to(0,0)$$

Il limite esiste ed è 0

③ $f(x,y) = \dfrac{(y-3)\log[(x+1)^2+y^2]}{\sqrt{1-\log(y-x^2)}}$

$$\begin{cases} (x+1)^2+y^2 > 0 \iff (x,y) \neq (-1,0) \\ 1-\log(y-x^2) > 0 \iff 1 > \log(y-x^2) \iff y-x^2 < e \\ y-x^2 > 0 \end{cases}$$

$\Rightarrow E = \{(x,y)\in\mathbb{R}^2 : (x,y)\neq(-1,0) \quad 0<y-x^2<e$



E è aperto, illimitato, ~~non connesso~~ connesso