

$$\alpha \geq 0$$

$$f_\alpha(x, y) = \frac{x y^3}{x^2 + y^2 + x^2 y^\alpha}$$

limita a ∞

1) Sia $A = [0, \infty[\times [0, \infty[$ per quali $\alpha \in \mathbb{R}$ il limite?

$$x = \rho \cos \theta \Rightarrow f_\alpha = \frac{\rho^4 (\cos \theta \sin^3 \theta)}{\rho^2 (\sin^2 \theta + \cos^2 \theta)}$$

$$y = \rho \sin \theta$$

$$\rho^2 \sin^2 \theta + \rho^2 \cos^2 \theta + \rho^{2+\alpha} (\sin^2 \theta + \cos^2 \theta)$$

$$f_\alpha = \frac{\rho^4 (\cos \theta \sin^3 \theta)}{\rho^{2+\alpha} (\sin^2 \theta + \cos^2 \theta)} \quad ?$$

oppure posso dire che f_α è equivalente a:

$$f_\alpha(x, y) = \frac{x y^3}{x^2 + y^2} = \frac{1}{x y^{\alpha-3}}$$

$$\text{per } \alpha > 3 \quad \frac{1}{x y^{\alpha-3}} \rightarrow 0$$

per $x^2 + y^2 \rightarrow \infty$?

$$\alpha = 3 \quad \frac{1}{x} \rightarrow 0$$

per $\alpha < 3$???