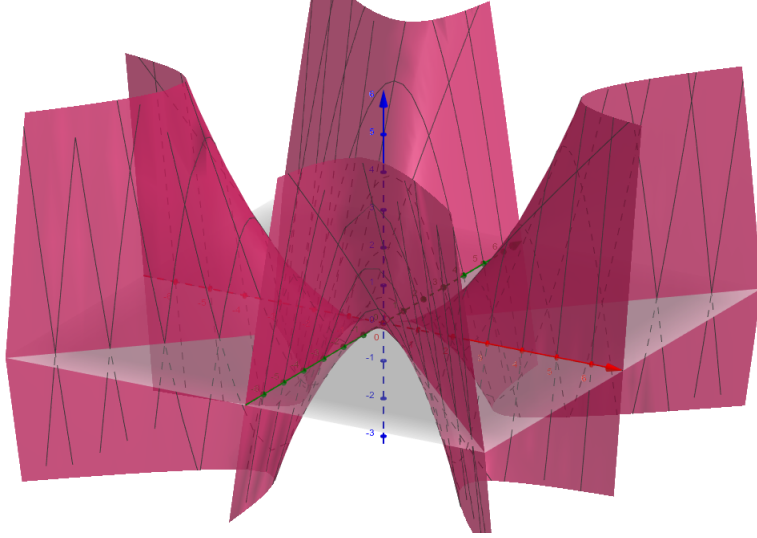


$$f(x, y) = \begin{cases} \frac{x^3 y - x y^3}{x^2 + y^2} & \text{si } (x, y) \neq (0, 0) \\ 0 & \text{si } (x, y) = (0, 0) \end{cases}$$



- 1.
2.
  - $f_x(x, y) = \frac{y(x^4 + 4x^2 y^2 - y^4)}{(x^2 + y^2)^2}$
  - $f_y(x, y) = \frac{x^5 - 4x^3 y^2 - x y^4}{(x^2 + y^2)^2}$
3.
  - $f_x(0, 0) = \lim_{h \rightarrow 0} \frac{0}{h^2} = 0$
  - $f_y(0, 0) = \lim_{h \rightarrow 0} \frac{0}{h^2} = 0$
4.
  - $f_{xy}(0, 0) = \lim_{h \rightarrow 0} \frac{-y^5}{y^4} = -1$
  - $f_{yx}(0, 0) = \lim_{h \rightarrow 0} \frac{x^5}{x^4} = 1$
5. No se contradice porque no son continuas