

Teorema de la función implícita

$$f(x, y) \in C^1 \wedge (x_0, y_0) \in \mathbb{R}^2 \text{ tq } f(x_0, y_0) = k \wedge \frac{\partial f}{\partial y} \neq 0 \Rightarrow$$

$$\exists \phi(x) \text{ tq } \phi(x_0) = y_0 \wedge \phi \in C^1$$

$$\phi'(x_0) = -\frac{f_x(x_0, y_0)}{f_y(x_0, y_0)}$$

Ejercicios

$$f : \mathbb{R}^2 \rightarrow \mathbb{R}$$

$$f(x, y) = x^2 - y^3$$

$$f(x, y) = 0$$

$$y = \phi(x)$$

$$p = (0, 0)$$

$$x^2 - y^3 = 0 \Rightarrow$$

$$y = \sqrt[3]{x^2} = x^{\frac{2}{3}} = \phi(x) \Rightarrow$$

$$\lim_{x \rightarrow 0} \sqrt[3]{x^2} = 0 \Rightarrow$$

$$\phi \in C^1$$

$$\phi'(x) = \frac{2}{3\sqrt[3]{x}}$$

$$f_y = -3y^2$$

$$f_x = 2x$$

No se puede plicar TFI porque $f_y(0, 0) = 0$