

# Ecuaciones exactas

$$f(x, y) \leftrightarrow M(x, y)dx + N(x, y)dy = 0$$

$$\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$$

$$\exists f(x, y) / \frac{\partial f}{\partial x} = M(x, y) \wedge \frac{\partial f}{\partial y} = N(x, y)$$

Determinar f integrando M(x,y) respecto a x, mientras y=c

$$\text{De aqui sale x} \leftarrow f(x, y) = \int M(x, y) + g(y) \leftarrow$$

Derivando respecto a y y suponiendo la derivada parcial de f con respecto a y  
=N(x,y)

$$\frac{\partial f}{\partial y} = \frac{\partial}{\partial y} \int M(x, y)dx + g'(x) = N(x, y)$$

$$g'(y) = N(x, y) - \frac{\partial}{\partial y} \int M(x, y)dx$$

$$\text{De aqui sale y} \leftarrow g(y) = \int g'(y)dy$$

Sustituyendo en

Solucion implicita:  $f(x,y)=c$