

Aprendizaje Automático

D. M. 4.18

① $f(x, y) = x^2 - y^2 + 2x$
 $\vec{a} = (1, 1)$

Gabriel Borrero y
Catalina Flórez

$$f(1, 1) = 1^2 - 1^2 + 2(1) = 1 - 1 + 2 = 2 = f(\vec{a})$$

$$\nabla f(x, y) = \langle 2x + 2, -2y \rangle$$

$$\nabla f(1, 1) = \langle 2 \cdot (1) + 2, -2(1) \rangle$$

$$\nabla f(1, 1) = \langle 4, -2 \rangle = \nabla f(\vec{a})$$

$$(\vec{x} - \vec{a}) = (x - 1, y - 1)$$

$$z = f(\vec{a}) + \nabla f(\vec{a}) \cdot (\vec{x} - \vec{a}) \rightarrow$$

Polinomio de Taylor
igualado a un
valor z .

$$z = 2 + \langle 4, -2 \rangle \cdot (x - 1, y - 1)$$

$$z = 2 + (4x - 4, -2y + 2)$$

$$z = 2 + 4x - 4 + -2y + 2$$

$$z = 4x - 2y$$

$$z = \underline{4x - 2y} \rightarrow \text{plano tangente} \rightarrow \text{RTA}$$