$$\begin{vmatrix} \frac{\partial^2 f}{\partial x^2} & \frac{\partial^2 f}{\partial x \partial y} \\ \frac{\partial^2 f}{\partial y \partial x} & \frac{\partial^2 f}{\partial y^2} \end{vmatrix}$$

$4 \cdot 3a^2 \quad 2a = ?$

$$\frac{\partial f}{\partial x} = \left(2(x^2+y^2)\cdot 2x - 4x\right)' = \left(4x^3 + 4y^2 \cdot 2x - 4x\right)' = 12x^2 + 2x^2 - 4$$

$$12a^2 + 2y^2 \cdot 2 - 4 = 12a^2 + 4y^2 - 4$$

$$\frac{\partial^2 f}{\partial y^2} = \left(2(x^2+y^2)\cdot 2y - 4y\right)' = \left(8xy^2 + 4y^3 - 4y\right)' = 4a^2 + 12y^2 - 4$$

$$(4a^2 + 12y^2 - 4)'_y$$

$$D = A \times B - C^2$$

$$\begin{vmatrix} 12x+2y-4 & 2y+2y-4 \\ 0 & 4y+12y-4 \end{vmatrix} = (12+2-4)(4\cdot 1 + 12\cdot 1 - 4) =$$

$$= (12 \cdot a - 2)(4 + 12 - 4) =$$

$$= (10)(12) = > 0$$

$$(M_1) > 0$$

$$\frac{\partial f^2}{\partial x^2} > 0 \Rightarrow \text{minim}$$

$$\begin{vmatrix} A & C \\ C & B \end{vmatrix}$$

$$\begin{vmatrix} 12a^2 + 4y^2 - 4 & 8yx \\ 8a & 4a^2 + 12y^2 - 4 \end{vmatrix}$$

$$\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial}{\partial y}\left(\frac{\partial f}{\partial x}\right) = \qquad K u'' = K u'$$

$$\frac{\partial}{\partial y}\left(4x^3 + 4y^2 x - 4x\right) \Rightarrow 4x \cdot y^2 = 4x \cdot 2y$$

$$= 8yx$$

$$\frac{\partial}{\partial x}\left(4x^2 + 12y^2 - 4\right) = 8x$$

$$\lg 2a =$$

$$12 \times 12 - 8 \times 8 = 144 - 64 \Rightarrow 0$$

$$y \quad a^2 = 2a$$