

(例2) (iii) 0 鞍, $z = f(x, y)$ の $z=2$ 上の点.

(a, b) $f(a, b)$ 鞍点 鞍点 鞍点

例 3.8.5

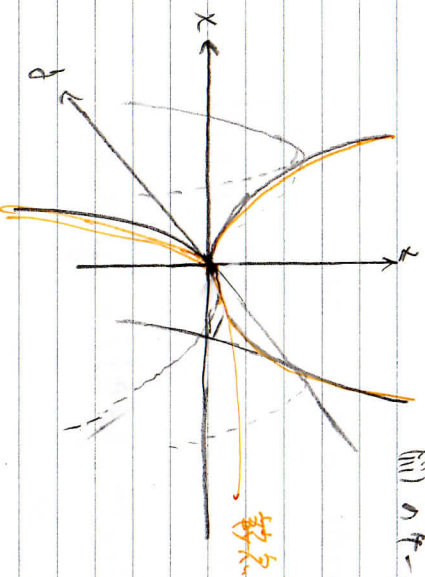
$$f(x, y) = x^2 - y^2 \quad \frac{\partial f}{\partial x} = 2x \quad \frac{\partial f}{\partial y} = -2y$$

$$\frac{\partial f}{\partial x} = \frac{\partial f}{\partial y} = 0 \rightarrow (x, y) = (0, 0)$$

$$\frac{\partial^2 f}{\partial x^2} = 2, \quad \frac{\partial^2 f}{\partial x \partial y} = 0 \quad \frac{\partial^2 f}{\partial y^2} = -2$$

$$Hf = \begin{pmatrix} 2 & 0 \\ 0 & -2 \end{pmatrix} \quad \det Hf = -4 < 0$$

(iii) 0 鞍点



$$Hf = \begin{pmatrix} \frac{\partial^2 f}{\partial x^2} & \frac{\partial^2 f}{\partial x \partial y} \\ \frac{\partial^2 f}{\partial x \partial y} & \frac{\partial^2 f}{\partial y^2} \end{pmatrix}$$

$$A = \begin{pmatrix} a & b \\ b & c \end{pmatrix}$$

ΔA : 行列式