

Loka'lní extrém - příklad

$$f(x, y) = x^3 + y^3 - 3x^2 - 3y^2 - 9x$$

$$f_x(x, y) = 3x^2 - 6x - 9 = 0 \Rightarrow x^2 - 2x - 3 = 0$$

$$\Rightarrow (x-3)(x+1) = 0 \Rightarrow \boxed{x_1 = 3; x_2 = -1}$$

$$\underline{f_y(x, y) = 3y^2 - 6y = 0} \Rightarrow y^2 - 2y = 0 \Rightarrow y \cdot (y-2) = 0$$

$$\Rightarrow \boxed{y_1 = 0; y_2 = 2}$$

$$A = [3, 0]$$

$$B = [-1, 2]$$

$$C = [-1, 0]$$

$$D = [-1, 2]$$

$$f_{xx}(x, y) = 6x - 6$$

$$f_{yy}(x, y) = 6y - 6$$

$$f_{xy}(x, y) = f_{yx}(x, y) = 0$$

$$D = \begin{vmatrix} 6x-6 & 0 \\ 0 & 6y-6 \end{vmatrix} = (6x-6)(6y-6)$$

	D	f_{xx}	zavěr
A	⊖	/	nenastává extrém
B	⊕	⊕	lok. min
C	⊕	⊖	lok. max
D	⊖	/	nenastává extrém