

PR: URČETE ABSOLUTNI (GLOBALNI) EXTREMŮ FUNKCE

$$f(x,y) = x^2 + y^2 - xy + x + y - 1; \quad x \geq 0, y \geq 0, x+y-2 \leq 0$$

a) STACIONÁRNÍ BODY

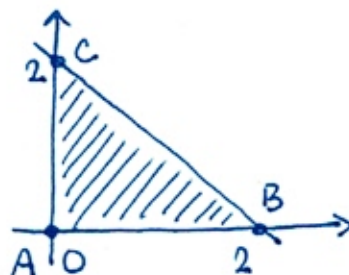
$$f'_x = 2x - y + 1 = 0$$

$$f'_y = 2y - x + 1 = 0$$

$$\begin{array}{rcl} 2x - y & = & -1 \\ -x + 2y & = & -1 \quad | \cdot 2 \end{array}$$

$$3y = -3$$

$$y = -1; \quad x = 2y + 1 = -1 \quad S[-1, -1] \notin \Delta$$



b) HRANICE : $x=0$, $y=0$, $y=-x+2$

1. $x=0$: $f(y) = y^2 + y + 1$

$$f'(y) = 2y + 1 = 0 \Leftrightarrow y = -\frac{1}{2}, \quad D[0, -\frac{1}{2}] \notin \Delta$$

2. $y=0$: $f(x) = x^2 + x - 1$

$$f'(x) = 2x + 1 = 0 \Leftrightarrow x = -\frac{1}{2}, \quad E[-\frac{1}{2}, 0] \notin \Delta$$

3. $y = -x + 2$: $f(x) = x^2 + (2-x)^2 - x(2-x) + x + (2-x) - 1 =$

$$= x^2 + 4 - 4x + x^2 - 2x + x^2 + x + 2 - x - 1 =$$

$$= 3x^2 - 6x + 5$$

$$f'(x) = 6x - 6 = 0 \Leftrightarrow x = 1 \Rightarrow y = 1 \Rightarrow F[1, 1]$$

c) $F[1, 1] \quad f(F) = 2$

$A[0, 0] \quad f(A) = -1$

$B[2, 0] \quad f(B) = 5$

$C[0, 2] \quad f(C) = 5$

GLOBALNÍ MAXIMUM : $B[2, 0], C[0, 2]$

GLOBALNÍ MINIMUM : $A[0, 0]$