RIEŠENIE [redacted] – MINITEST 12 – SK: 9:15 – 7.12.2021

Nájdite stac. body zadanej funkcie:

$$f(x,y) = -x^3 - x^2 + 4x + y^2 + 2xy$$

$$\frac{\partial f}{\partial x} = -3x^2 - 2x + 4 + 2y = 0$$

$$\frac{\partial f}{\partial y} = +2y + 2x = 0 \Rightarrow 2x = -2y$$

$$x = -y$$

0,5

$$-3(-y)^2 - 2(-y) + 4 + 2y = -3y^2 + 2y + 4 + 2y = 0$$

$$= -3y^2 + 4y + 4 = 0$$

1,0

$$y_{1,2} = \frac{-4 \pm \sqrt{16 + 4 \cdot 3 \cdot 4}}{2 \cdot (-3)} = \frac{-4 \pm \sqrt{64}}{-6} = \frac{-4 \pm 8}{-6} = \begin{cases} \frac{4}{-6} = -\frac{2}{3} \\ \frac{-12}{-6} = 2 \end{cases}$$

48 $= 8$

$$SB: \left\{(-2,2); \left(\frac{2}{3}, -\frac{2}{3}\right)\right\}$$

0,25 0,25

RIEŠENIE - MINITEST 12 - SK: 12:45 - 7.12.2021

Nájdite stac. body zadanej funkcie:

$$f(x,y) = x^2 + 2x - 4xy + 2y^3 + 6y^2 - 4y$$

$$\frac{\partial f}{\partial x} = 2x + 2 - 4y = 0$$

$$\frac{\partial f}{\partial y} = -4x + 2 \cdot 3y^2 + 6 \cdot 2y - 4 = 6y^2 + 12y - 4x - 4 = 0$$

} 0,5

$2x + 2 = 4y$

$2x = 4y - 2$

$x = 2y - 1$

$6y^2 + 12y - 4x - 4 = 0$

$6y^2 + 12y - 4(2y - 1) - 4 = 0$

$6y^2 + 12y - 8y + 4 - 4 = 0$

$6y^2 + 4y = 0$

$y \cdot (6y + 4) = 0 \Leftrightarrow y_1 = 0 \vee 6y_2 + 4 = 0$

1 b

14/6

$6y_2 = -4$

$y_2 = -\frac{4}{6} = -\frac{2}{3}$

$x_1 = 2y_1 - 1 = -1 + 2 \cdot 0 = -1$

$x_2 = 2y_2 - 1 = 2 \cdot \left(-\frac{2}{3}\right) - 1 = -\frac{4}{3} - \frac{3}{3} = -\frac{7}{3}$

MNOŽINA STACIONÁRNYCH BODOV (SB) $= \{(-1,0), (-\frac{7}{3}, -\frac{2}{3})\}$

0,25 0,25