2.

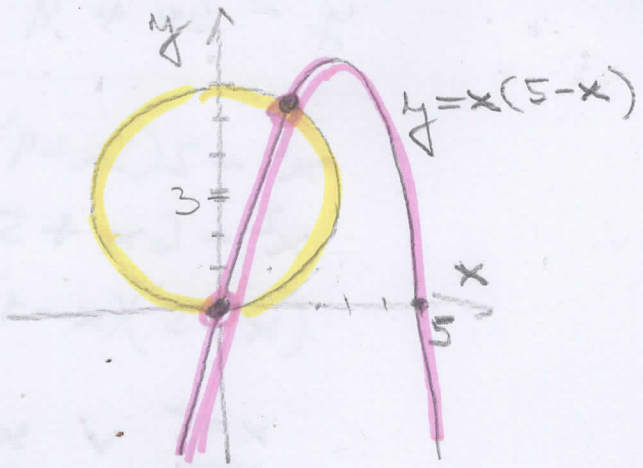
$\underbrace{x^2 + y^2 - 6y = 0}_{=: F_1(x,y)}$

$x^2 + y^2 - 6y + 9 = 9$

$x^2 + (y-3)^2 = 9$ ... kružnice se středem $[0;3]$ a poloměrem 3

$\underbrace{x^2 - 5x + y = 0}_{=: F_2(x,y)}$

$y = 5x - x^2 = x(5-x)$ ... parabola



2 řešení

$\frac{\partial F_1}{\partial x} = 2x \Big|_{[2;5]} = 4$

$\frac{\partial F_1}{\partial y} = 2y - 6 \Big|_{[2,5]} = 4$

$\frac{\partial F_2}{\partial x} = 2x - 5 \Big|_{[2,5]} = -1$

$\frac{\partial F_2}{\partial y} = 1$

JAKOBIHO MATICE

$J_F(2,5) = \begin{pmatrix} 4 & 4 \\ -1 & 1 \end{pmatrix}$

$A^{-1} = \frac{1}{\det A} \cdot \operatorname{adj} A$

$\begin{pmatrix} 4 & 4 \\ -1 & 1 \end{pmatrix}^{-1} = \frac{1}{8} \cdot \begin{pmatrix} 1 & -4 \\ 1 & 4 \end{pmatrix}$

1. ITERACE:

$\begin{pmatrix} x_1 \\ y_1 \end{pmatrix} = \begin{pmatrix} x_0 \\ y_0 \end{pmatrix} - J_F^{-1}(2,5) \cdot \begin{pmatrix} F_1(2,5) \\ F_2(2,5) \end{pmatrix}$

$= \begin{pmatrix} 2 \\ 5 \end{pmatrix} - \frac{1}{8} \begin{pmatrix} 1 & -4 \\ 1 & 4 \end{pmatrix} \cdot \begin{pmatrix} -1 \\ -1 \end{pmatrix} = \begin{pmatrix} 1{,}625 \\ 5{,}625 \end{pmatrix}$