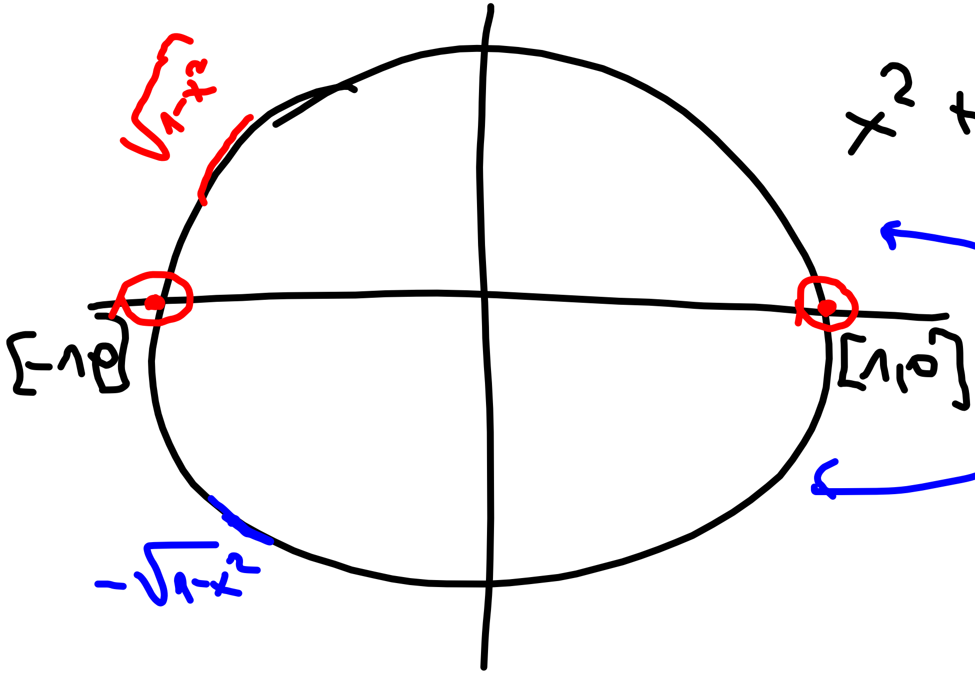
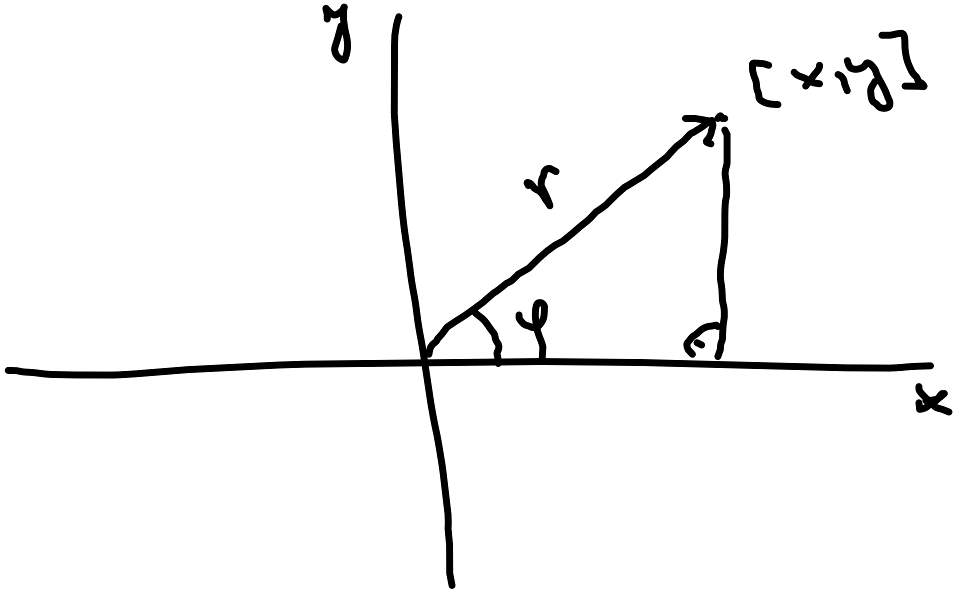


$$x^2+y^2=1$$

$$y=f(x)=\sqrt{1-x^2}$$

$$y=f(x)=-\sqrt{1-x^2}$$



$$\frac{x}{r}=\cos\varphi$$

$$\frac{y}{r}=\sin\varphi$$

$$x=r\cos\varphi$$

$$y=r\sin\varphi$$

$f(x,y) = xy$ v bodě $[2,1]$

$g(x,y) = \frac{x}{y}$

$F = (f(x,y), g(x,y))$

$$D^1F = \begin{pmatrix} f_x & f_y \\ g_x & g_y \end{pmatrix} = \begin{pmatrix} y & x \\ \frac{1}{y} & -\frac{x}{y^2} \end{pmatrix}$$

$$D^1F(2,1) = \begin{pmatrix} 1 & 2 \\ 1 & -2 \end{pmatrix}$$ je invertibilní, neboť $\det D^1F(2,1) = -4$

$\Longrightarrow$ F je prosté v okolí $[2,1]$

Jacobián inverzního zobrazení F^{-1} je tedy

$$\left(D^1F(2,1)\right)^{-1} = \frac{1}{-4}\begin{pmatrix} -2 & -2 \\ -1 & 1 \end{pmatrix} = \underline{\underline{\begin{pmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{4} & -\frac{1}{4} \end{pmatrix}}}$$

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

Název: X 14-12:37 (2 z 6)

$F(x,y): x^2 + y^2 - 1 = 0$ $\quad [1/\sqrt{2}, 1/\sqrt{2}]$

$$2x + 2y \cdot y' = 0$$

$$y' = -\frac{x}{y} = -1$$

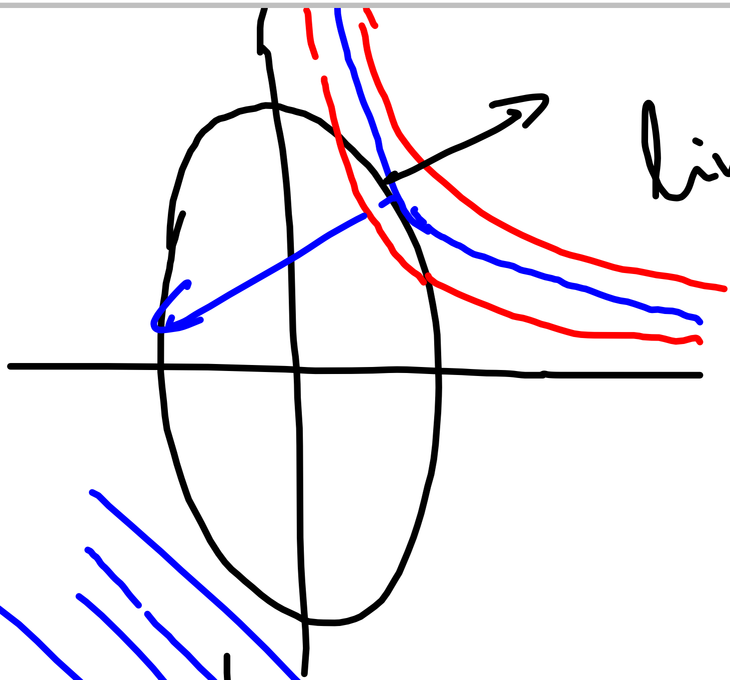
Pří:

$$z_{xx} = -\frac{2}{2z - x - \sqrt{2}y}, \quad z_{xy} = 0, \quad z_{yy} = -\frac{2}{2z - x - \sqrt{2}y}.$$

$\Longrightarrow z_{xx}(1, \sqrt{2}, 2) = -2 = z_{yy}$

$H_f(1, \sqrt{2}, 2) = \begin{pmatrix} -2 & 0 \\ 0 & -2 \end{pmatrix}$ neg. def.

$H_f(-1, -\sqrt{2}, -2) = \begin{pmatrix} 2 & 0 \\ 0 & 2 \end{pmatrix}$ poz. def.



lin. závislé normály

$$x^2 y = 1$$