Paraboloida ściśle styczna do sfery jednostkowej

clc

clear

syms x y r

% f=sqrt(r^2-x^2-y^2); %sfera

% f=sqrt(r^2-x^2); %walec

fx=diff(f,x)

fy=diff(f,y)

fxx=diff(fx,x)

fxy=diff(fx,y)

fyx=diff(fy,x)

fyy=diff(fy,y)

f0=subs(f,{x,y},{0,0})

fx0=subs(fx,{x,y},{0,0})

fy0=subs(fy,{x,y},{0,0})

fxx0=subs(fxx,{x,y},{0,0})

fxy0=subs(fxy,{x,y},{0,0})

fyx0=subs(fyx,{x,y},{0,0})

fyy0=subs(fyy,{x,y},{0,0})

paraboloid= f0+fx0\*x+fy0\*y+0.5\*(fxx0\*x^2+2\*fxy0\*x\*y+fyy0\*y^2)

paraboloidr=subs(paraboloid,{r},{1})

X=[-0.5:0.01:0.5]

Y=[-0.5:0.01:0.5]

paraboloidrX = subs(paraboloidr,{x},X)'

paraboloidrY = subs(paraboloidrX,{y},Y)

surface(X, Y, paraboloidrY)

view(3)

