GEODESICS FOR A SPHERICAL SURFACE(Multiple paths case)

Source code:

r=1;

th=linspace(0,%pi,60)

ph1=linspace(0,2\*%pi,60)

[theta1,phi1]=meshgrid(th,ph1)

x=r.\*sin(theta1).\*cos(phi1)

y=r.\*sin(theta1).\*sin(phi1)

z=r.\*cos(theta1)

surf(x,y,z,"facecol","white","edgecol","yellow")

title("Geodesic Great Circle over a sphere","color",-1,"fontsize",5)

xlabel("x ","color",-1,"fontsize",5)

ylabel("y ","color",-1,"fontsize",5)

zlabel("z ","color",-1,"fontsize",5)

//part-4

n=input("Enter the total no. of paths=")

for i=1:n

ph0=input("Enter phi for path "+string(i)+" =")

th=acot(cos(ph1-ph0))

x=r.\*sin(th).\*cos(ph1)

y=r.\*sin(th).\*sin(ph1)

z=r.\*cos(th)

param3d1(x,y,list(r.\*cos(th)',i))

c=get("hdl")

c.thickness=3

end

legend("Path-1","Path-2","Path-3","Path-4",4)

OUTPUT:

Enter phi for path 1 =20

Enter phi for path 2 =-30

Enter phi for path 3 =40

Enter phi for path 4 =-50



