clear

clc

%task1

clear

hold on

grid on

disp('---Task 1---')

figure(1)

t=0:.1\*pi:2\*pi

for i=1:5:50

H=plot(t,sin(t))

rotate(H,[0 0 1],i), pause(0.5)

M(i)=getframe

end

%Task 2

clear

disp('---Task 2---')

figure(2)

hold on

grid on

view(70,45)

axis equal

%строим ось вращения-ось оу

quiver3(0,-10,0,0,10,0,2,'Linewidth',2,'Color','r')

%строим прямую L

xI1=-10:0.01:-3

xI2=3:0.01:10

syms x y

ysym=solve('x^2/9-y^2/4=1',y)

yI1=double(subs(ysym,x,xI1))

yI2=double(subs(ysym,x,xI2))

xlabel('x')

ylabel('y')

zlabel('z')

for i=1:6:180

L=plot(xInt1,yInt1,'m',xInt2,yInt2,'m')

rotate(L,[0 1 0],i),pause(0.05)

end

%Task 3

clear

disp('---Task 3---')

figure(3)

hold on

grid on

a=1

b=1

c=2

xlabel('x')

ylabel('y')

zlabel('z')

u=(-2:0.1:2)'

phi=0:pi/100:2\*pi

X=a\*ones(size(u))\*cos(phi)

Y=b\*ones(size(u))\*sin(phi)

Z=u\*ones(size(phi))

mesh(X,Y,Z)

disp('Каноническое уравнение эллиптического цилиндра')

disp('x^2/1+y^2/1=1')

%Task 4

clear

disp('---Task 4---')

figure(4)

hold on

grid on

a=4

b=2

c=3

u=(0:0.01\*pi:2\*pi)';

v=[0:0.01\*pi:2\*pi];

X=a\*sin(u)\*cos(v)

Y=b\*sin(u)\*sin(v)

Z=c\*cos(u)\*ones(size(v))

figure('Color','g')

hS=mesh(X,Y,Z)

xlabel('x')

ylabel('y')

zlabel('z')