clear

clc

%Task 1

clear

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

A=[1 2]

B=[-2 8]

AB=B-A

n=[-AB(2) AB(1)]

syms x y

simplify(n(1)\*(x-A(1))+n(2)\*(y-A(2)))

x=0;

%3y=12

y=4;

figure(1)

fplot(@(x)-2\*x+4,[-10 10])

hold on

grid on

xlabel('x')

ylabel('y')

axis([-10 10 -10 10])

line([-10 10],[0 0 ],'lineWidth',2)

line([0 0 ],[-10 10],'lineWidth',2)

plot (x ,y,'g+')

text(x,y,'C(5,0)')

plot(A(1),A(2),'g\*')

text(A(1),A(2),'A(1,2)')

plot(B(1),B(2),'g\*')

text(B(1),B(2),'B(-2,8)')

%Task 2

clear

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

n=[-3 4]

A1=-15

A2=-35

visota=abs (A1-A2)/sqrt(n(1)^2+n(2)^2)

figure(2)

fplot(@(x) 3\*x/4+15/4,[-10 10])

hold on

grid on

xlabel('x')

ylabel('y')

axis([-10 10 -10 10])

line([-10 10],[0 0 ],'lineWidth',2)

line([0 0 ],[-10 10],'lineWidth',2)

quiver (-5,0,n(1),n(2),0.8)

fplot(@(x) 3\*x/4+35/4,[-10 10])

%Task 3

clear

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

syms x y

%1/2-x/2=y/3+1/3

y1=1/2-3\*x/2

y2=5\*x+7

%y1=y2

x=-1

y=5\*x+7

t=(x-1)/2

figure(3)

fplot(@(x) 1/2-3\*x/2,[-10 10])

plot(x,y)

xlabel('x') ,ylabel('y')

hold on

grid on

axis([-10 10 -10 10])

line([-10 10],[0 0 ],'lineWidth',1)

line([0 0 ],[-10 10],'lineWidth',1)

fplot(@(x) 5\*x+7,[-10 10])

plot(-1,2,'g\*')

text(-1,2,'A(-1,2)')

%Task 4

clear

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

syms x y

y1=x/2+3/2

y2=-2\*x-5

y=y1-y2

%y=5\*x/2+13/2

x=-13/5

yp=x/2+3/2;

A=[x y];

xp=x;

x=-5:0.1:5;

y1=x/2+3/2;

y2=-2\*x-5;

figure(4)

title('уравнение прямой')

plot(xp,yp,'g')

hold on

grid on

text(xp,yp,'M(0) (-13/5,1/5)')

axis([-5 5 -5 5])

line([-5 5],[0 0 ],'lineWidth',1)

line([0 0 ],[-5 5],'lineWidth',1)

xlabel('x') ,ylabel('y')

line(x,y1)

line(x,y2)

line([xp xp],[-5 5])

plot(x,y1)