

Lampiran 2 : Kode Program MATLAB Grafik Bidang Fase pada Titik Setimbang E_1

Program Fungsi:

```
function xdot= bidang_fase_endemik(t,x)
global sigma b c mu delta epsilon gamma si tau;
xdot=zeros (4,1);
xdot(1)= sigma - mu*x(1)-(gamma-epsilon)*x(3)-tau*x(4);
xdot(2)= b*c*x(3)*(x(1)-x(2)-x(3)-x(4))/x(1)-(mu+delta)*x(2);
xdot(3)= delta*x(2)+epsilon*x(3)-(mu+gamma+si)*x(3);
xdot(4)= si*x(3)-(mu+tau)*x(4);
end
```

Program Running:

```
clc;
closeall;
clearall;
global sigma b c n mu delta epsilon gamma si tau;
sigma=10;
b=0.5;
c=10;
n=1000;
mu=0.2;
delta=0.8;
epsilon=0.2;
gamma=0.01;
si=0.9;
tau=0.8;
R0=(b*c*delta)+epsilon*(mu+delta)/(mu+gamma+si-epsilon)*(mu+delta)
x0=[1000,750,300,50];
x1=[800,650,200,10];
x2=[500,300,100,1];
tint=[0 10];
[t1,x11]=ode45(@bidang_fase_endemik,tint,x0);
[t2,x12]=ode45(@bidang_fase_endemik,tint,x1);
[t3,x13]=ode45(@bidang_fase_endemik,tint,x2);
figure(1);
plot(x11(:,1), x11(:,3), 'magenta', x12(:,1), x12(:,3),'green',x13(:,1),x13(:,3),
'blue');
xlabel('populasi');
ylabel('infected');
```