```
clc
clear
close all
global k1 k2 k3
k1 = 100; %units: 1/|\dot{I}M/min|
k2 = 600; %units:1/min
k3 = 150; %units:1/min
% initial conditions
S0 = 10; % units: | ÌM
P0 = 0; % units: |\dot{I}M
E0 = 1; % units: | ÌM
ESO = 0; % units: |\dot{I}M|
y0 = [S0; P0; E0; ES0]; % set of init conditions
f = Q(t,y) \text{ myfunc}(t,y);
tf = 0.5; %units:min
[t,y] = ode45(f,[0,tf],y0);
S = y(:,1);
P = y(:,2);
E = y(:,3);
ES = y(:, 4);
% ANSWER FOR 8.2
plot(t,S,t,P,t,E,t,ES)
legend({'S','P','E','ES'},'NumColumns',2)
xlabel('Time(min)')
grid on
% ANSWER FOR 8.3
figure
S0 = 500; % units: | ÌM
P0 = 0; % units: | ÌM
E0 = 1; % units:|\dot{I}M
ESO = 0; % units: |\dot{I}M|
v0 = [S0;P0;E0;ES0]; % set of init conditions
f = Q(t,y) \text{ myfunc}(t,y);
tf = 10;
```

```
S = y(:,1);
            P = y(:,2);
            E = y(:,3);
            ES = y(:, 4);
            v = k3 * ES;
            plot(S, v)
            ylabel('Velocity')
            xlabel('S')
            txt = 'As shown in the plot, Vm = 150';
            text(5,5,txt)
            grid on
            % ANSWER FOR 8.1
            function dydt=myfunc(t,y)
            global k1 k2 k3
            S = y(1);
            P = y(2);
            E = y(3);
            ES = y(4);
            dydt = zeros(4,1);
            dydt(1) = -k1 * S * E + k2 * ES;
            dydt(2) = k3 * ES;
            dydt(3) = -k1 * S * E + (k2 + k3) * ES;
            dydt(4) = k1 * S * E - (k2 + k3) * ES;
            end
Figure 1
                                     Figure 2
                                          文件(F) 编辑(E) 查看(V) 插入(I) 工具(T) 桌面(D) 窗口(W) 帮助(H)
文件(E) 编辑(E) 查看(V) 插入(I) 工具(I) 桌面(D) 窗口(W) 帮助(H)
🖺 😝 📓 🦫 🖫 🔳 🕃
                                            🖺 🗃 📓 🦫 🖫 📗 🔡 🖟
   10
                                              160
    9
                                              140
    8
                                              120
    7
                                              100
    6
    4
                                               40
                                               20
    2
                                                       As shown in the plot, Vm = 150
    1
                                               -20
           0.1
                                                -100
                                                           100
                                                                 200
                                                                      300
                                                                            400
                                                                                  500
                   Time(min)
                                                                 S
```

[t,y] = ode45(f,[0,tf],y0);