

```
##### Example 3-13, Applied Nonlinear Control, Slotine: Dr Mohamad Reza Ramezani
```

```
clear all  
close all  
clc
```

```
[t,x]=ode45(@limit,[0 20],[-1,1]);
```

```
##### Plot states, phase portrait and Lyapunov function
```

```
figure(1)  
plot(x(:,1),x(:,2))  
xlabel('x1')  
ylabel('x2')  
title('Phase portrait')  
grid on
```

```
figure(2)  
subplot(2,1,1)  
plot(t,x(:,1))  
title('System States')  
ylabel('x1')  
grid on  
subplot(2,1,2)  
plot(t,x(:,2))  
ylabel('x2')  
xlabel('time')  
grid on
```