

## Contents

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- [Initial conditions](#)
- [ODE tracking with adaptive control](#)
- [Plotting the results](#)

## Initial conditions

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```
theta_initial=8;  
x_initial=0.5;  
x0=[8;1];  
x1=[5;1];  
x2=[15;1];  
xf=10;  
tf=10;
```

## ODE tracking with adaptive control

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```
options = odeset('RelTol',1e-4,'AbsTol',[1e-4, 1e-4]);  
[T0,X0] = ode45(@(t,x) odethetatracking(t,x),[0 tf],x0,options);  
  
[T1,X1] = ode45(@(t,x) odethetatracking(t,x),[0 tf],x1,options);  
  
[T2,X2] = ode45(@(t,x) odethetatracking(t,x),[0 tf],x2,options);
```

## Plotting the results

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```
figure('Name','Plotting theta vs t');  
plot(T0, X0(:,1),T1, X1(:,1),T2, X2(:,1));  
ylabel('theta');  
xlabel('t');  
legend({'theta=8','theta=5','theta=15'},'Location','southeast');  
  
figure('Name','Plotting x vs t');  
plot(T0, X0(:,2),T1, X1(:,2),T2, X2(:,2));  
ylabel('x');  
xlabel('t');  
legend({'theta=8','theta=5','theta=15'},'Location','northeast');
```



