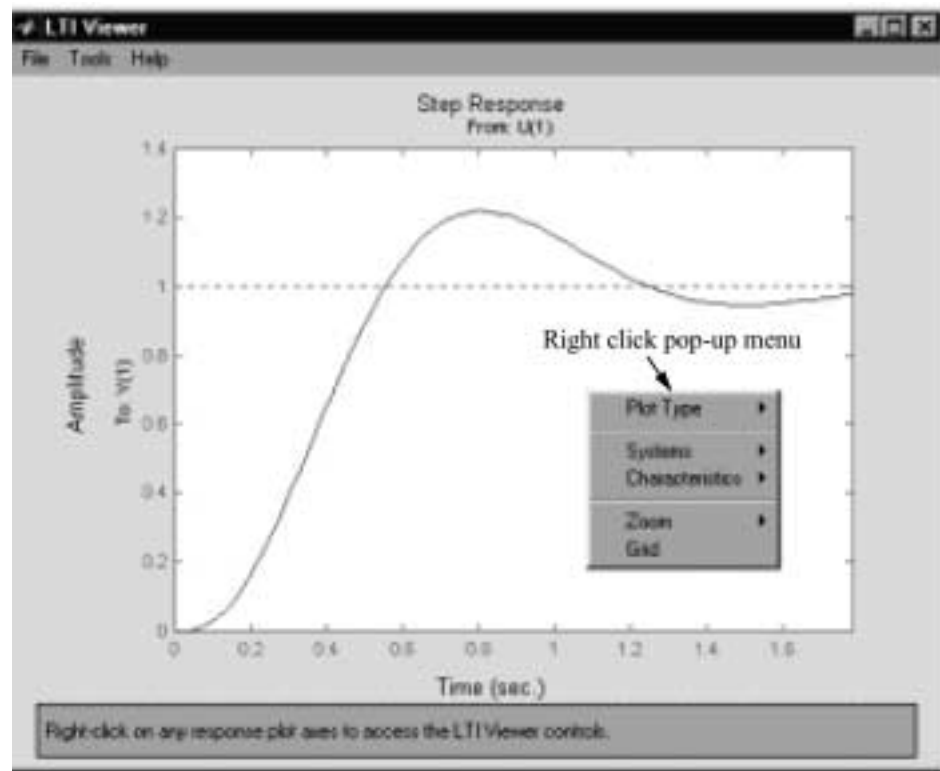


# Appendix D

## MATLAB's GUI Tools Tutorial

**Figure D.1**  
LTI Viewer showing  
right click pop-up  
menu



## Figure D.2

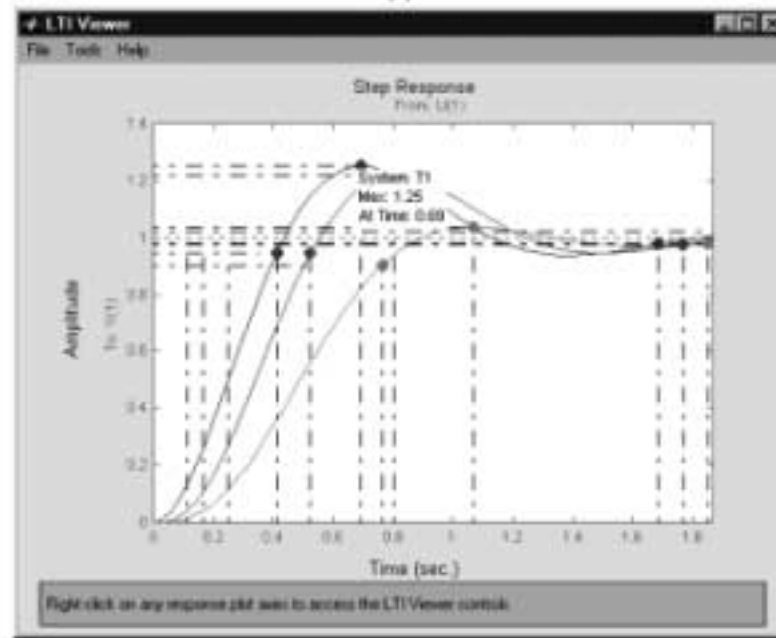
LTI Viewer used for  
step response:

a. M-file;

b. LTI Viewer

```
*Example D.1*
*LTI Viewer for Chapter 4, Example 4.8*
*Step response*
*T1(s)*
T1=tf(24.542,[1 4 24.542])
*T2(s)*
T2=tf(245.42,conv([1 10],[1 4 24.542]))
*T3(s)*
T3=tf(73.626,conv([1 3],[1 4 24.542]))
ltiview
%Display label.
%Display label.
%Display label.
%Display label.
%Create T1.
%Display label.
%Create T2.
%Display label.
%Create T3.
%Call up LTI Viewer.
```

(a)



(b)

**Figure D.3**

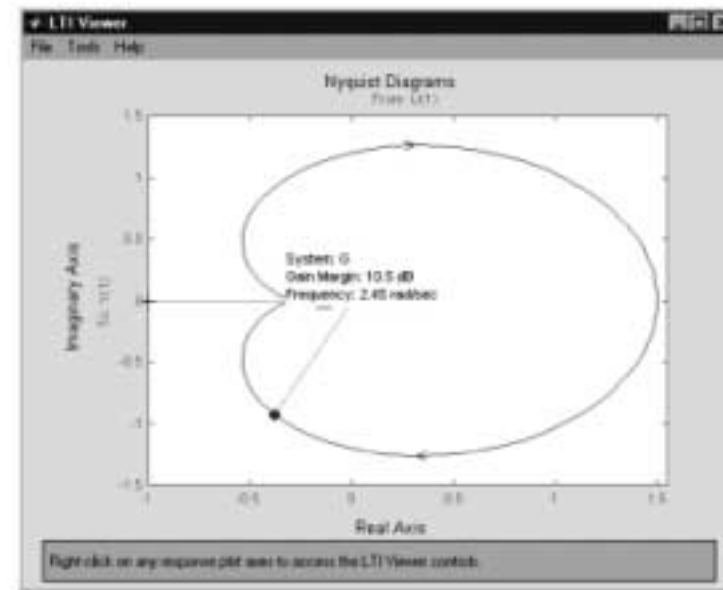
LTI Viewer used for  
Nyquist diagram:

a. M-file;

b. LTI Viewer

```
'Example D.2' %Display label.
'LTI Viewer for Chapter 10 Example 10.8' %Display label.
'Nyquist diagram' %Display label.
numg=6; %Create numerator of G(s).
deng=conv([1 2],[1 2 2]); %Create denominator of G(s).
'G(s)' %Display label.
G=tf(numg,deng) %Create and display G(s).
ltiview %Call up LTI Viewer.
```

(a)



(b)

## Figure D.4

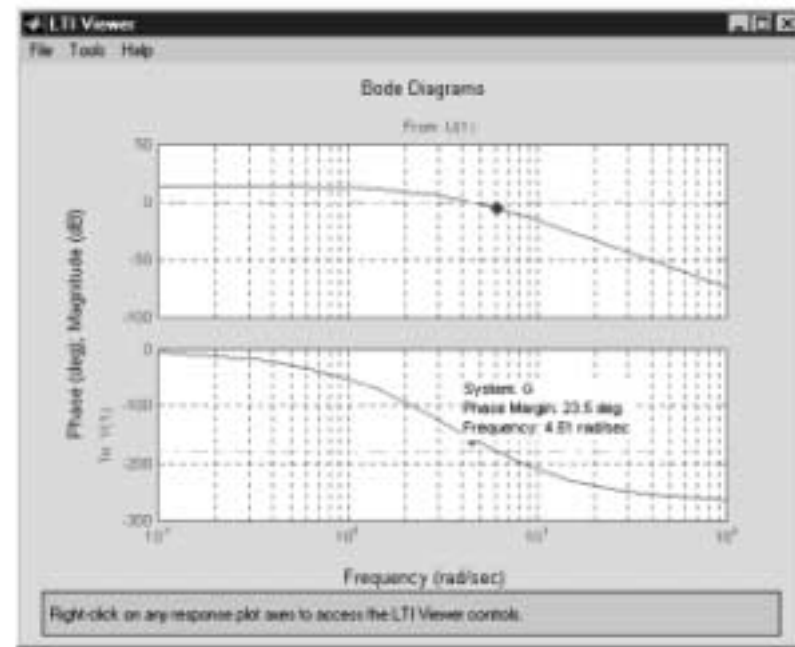
Figure D.4 LTI Viewer  
used for Bode plot:

a. M-file;

b. LTI Viewer

```
Example D.3*                                %Display label.
*LTI Viewer For Chapter 10, Example 10.10*
%Code plot*                                %Display label.
numg=200;                                  %Create numerator of G(s).
deng=poly([-2 -4 -5]);                     %Create denominator of G(s).
%G(s)*                                     %Display label.
[G=tf(numg,deng)]                          %Create and display G(s).
ltiview                                    %Call up LTI Viewer.
```

(a)



(b)

## Figure D.5

Figure D.5 LTI Viewer  
used for Nichols chart:

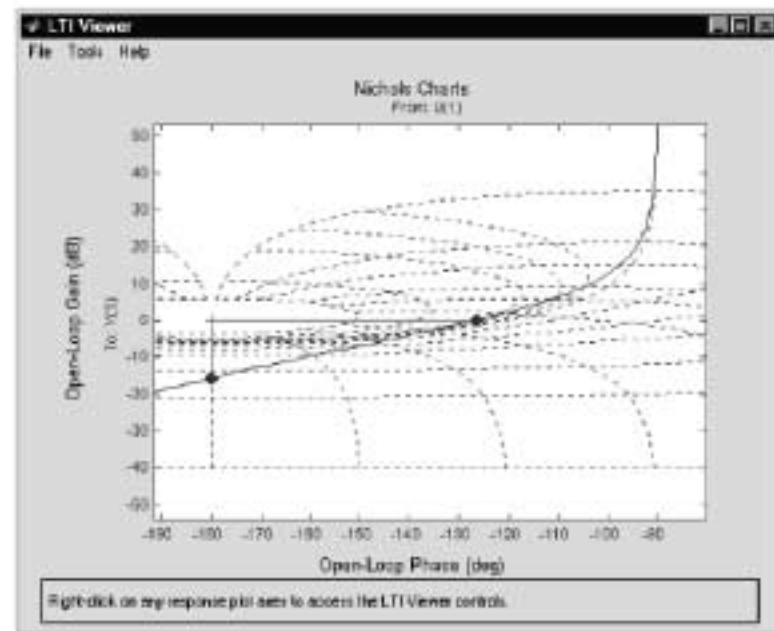
a. M-file;

b. LTI Viewer

```
'Example 0.4' %Display label.
'LTI Viewer for Chapter 18, Figure 18.47' %Display label.

'Nichols chart' %Display label.
numg=1; %Create numerator for G(s).
deng=poly([0 -1 -2]); %Create denominator for G(s).
'G(s)' %Display label.
G=tf(numg,deng) %Create G(s).
ltiview %Call up LTI Viewer.
```

(a)



(b)

## Figure D.6

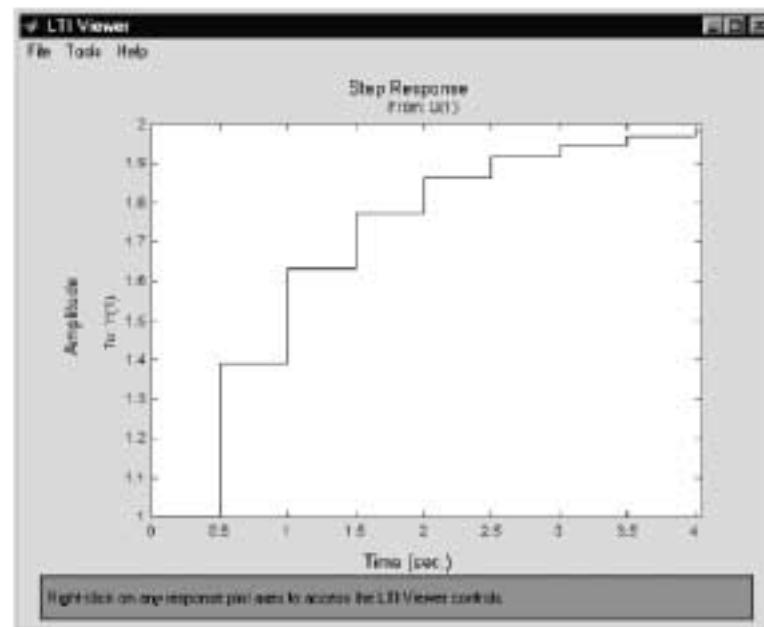
Figure D.6 LTI Viewer  
used for digital step  
response:

a. M-file;

b. LTI Viewer

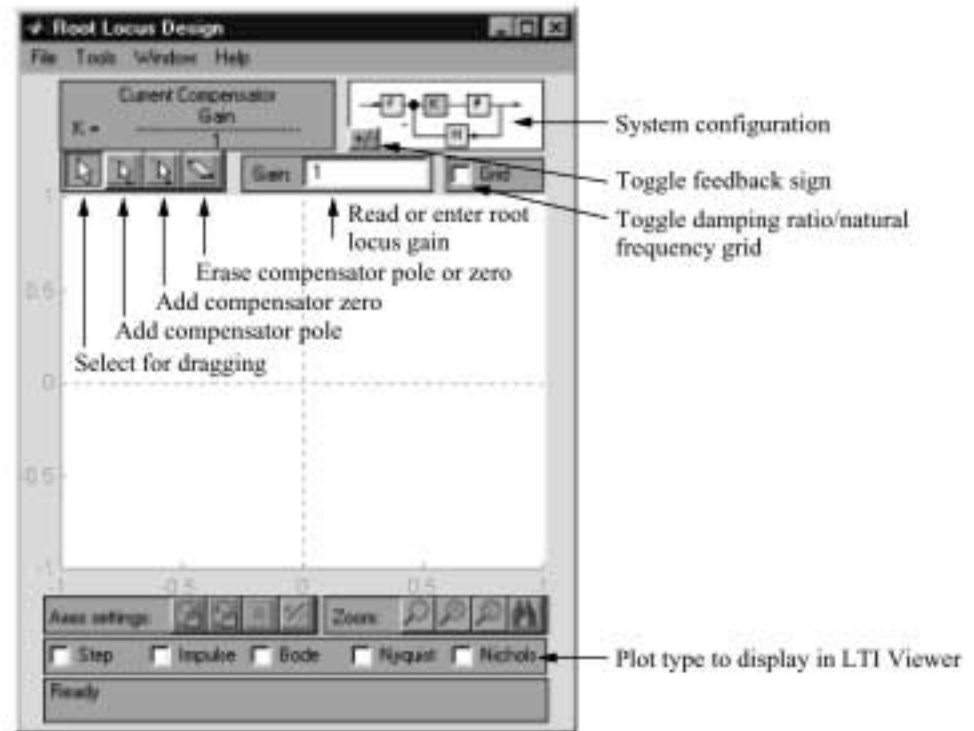
```
'Example 0.5' %Display label.
'LTI Viewer for Chapter 13' %Display label.
'Digital step response' %Display label.
'G(z)' %Display label.
G=tf([1 -0.214],[1 -0.687],0.5) %Create sampled transfer function.
'T(z)' %Display label.
T=G/(1+G) %Calculate closed-loop sampled
%transfer function for unity
%feedback sampled system.
ltiview %Call LTI Viewer.
```

(a)



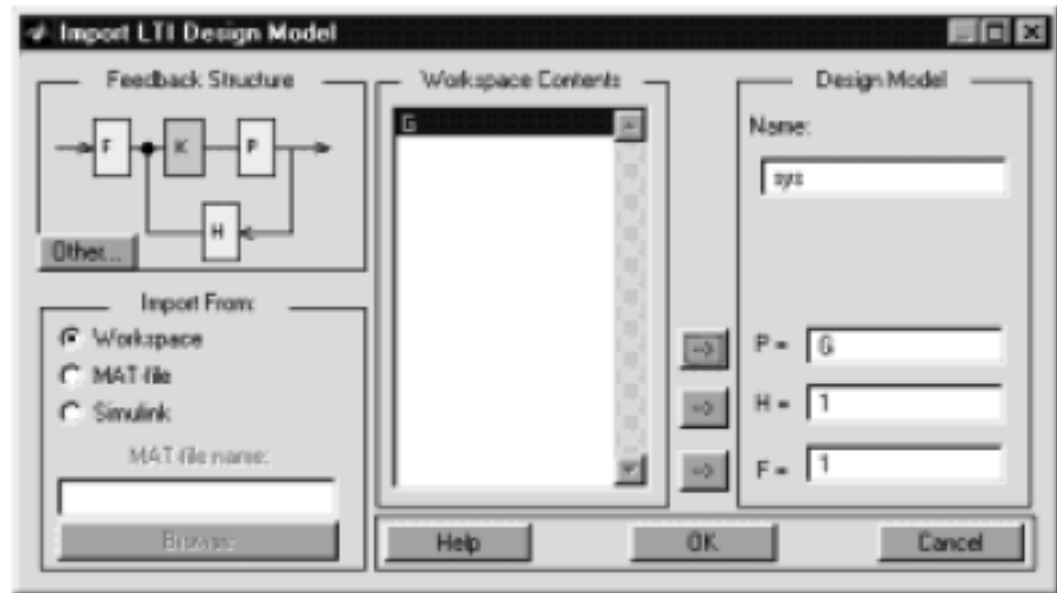
(b)

**Figure D.7**  
**Root Locus Design**  
 window

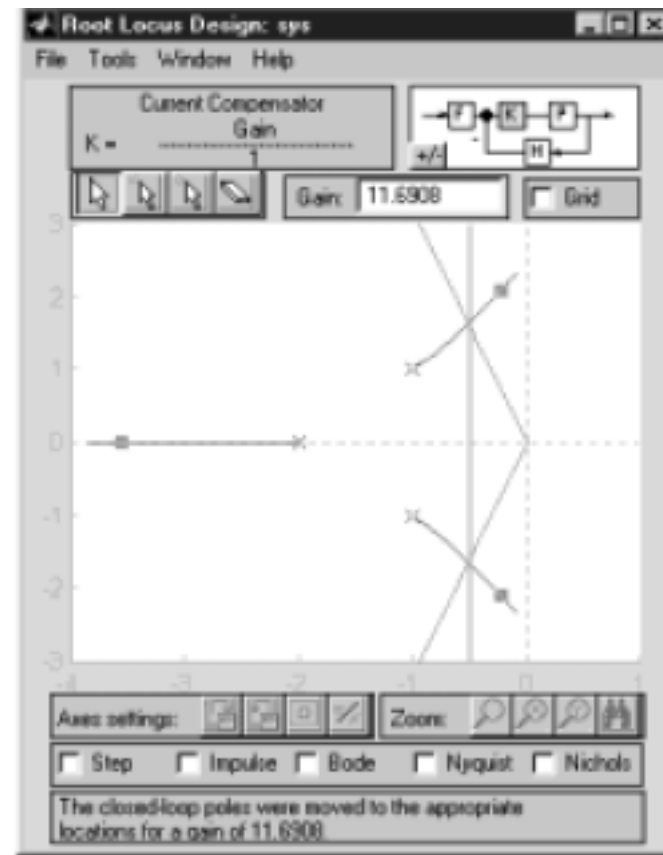




**Figure D.8**  
The **Import LTI Design Model** window showing **G** selected as the plant, **P**



**Figure D.9**  
**Root Locus Design**  
window for the  
created system with  
the closed-loop pole in  
the second quadrant  
selected



**Figure D.10**  
**Grid and Constraint**  
**Options** window with  
boundaries for eight  
seconds settling time  
and 0.3 damping ratio

