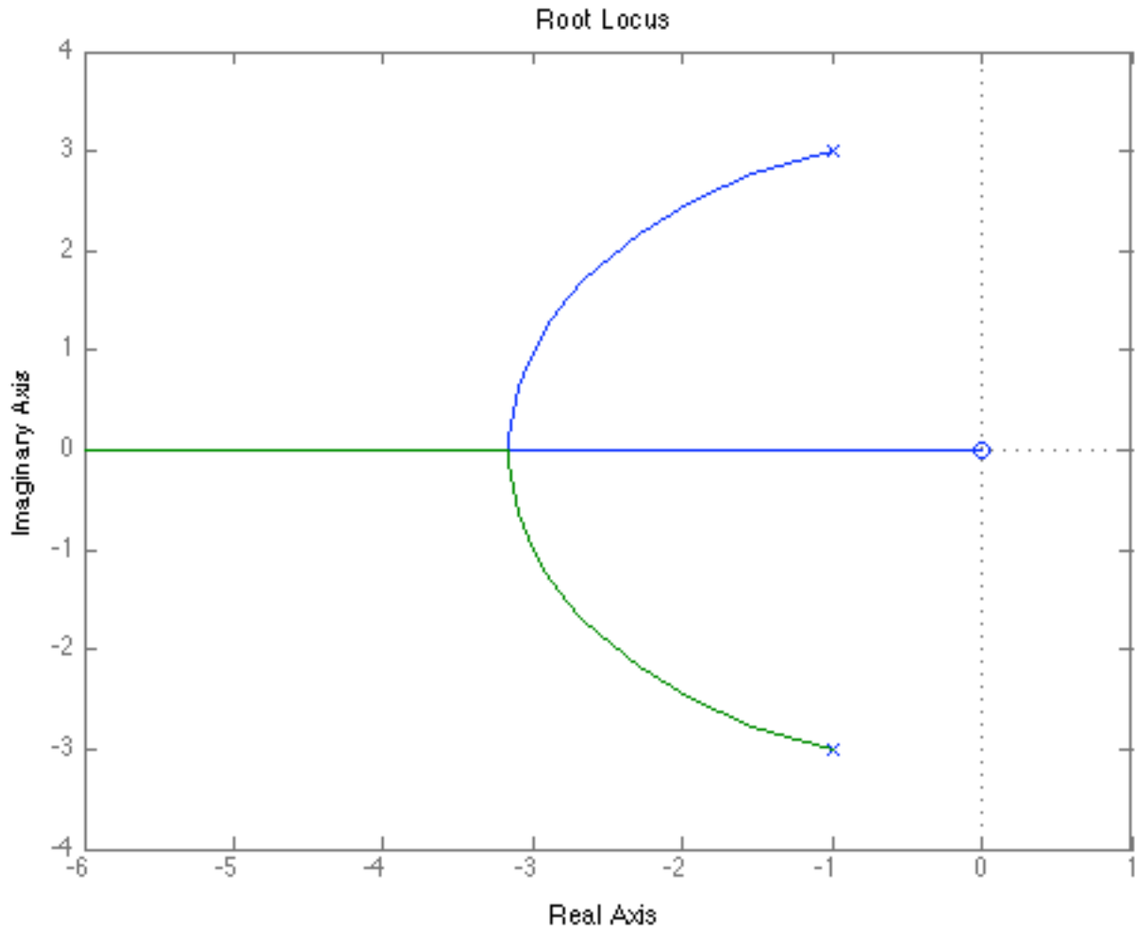
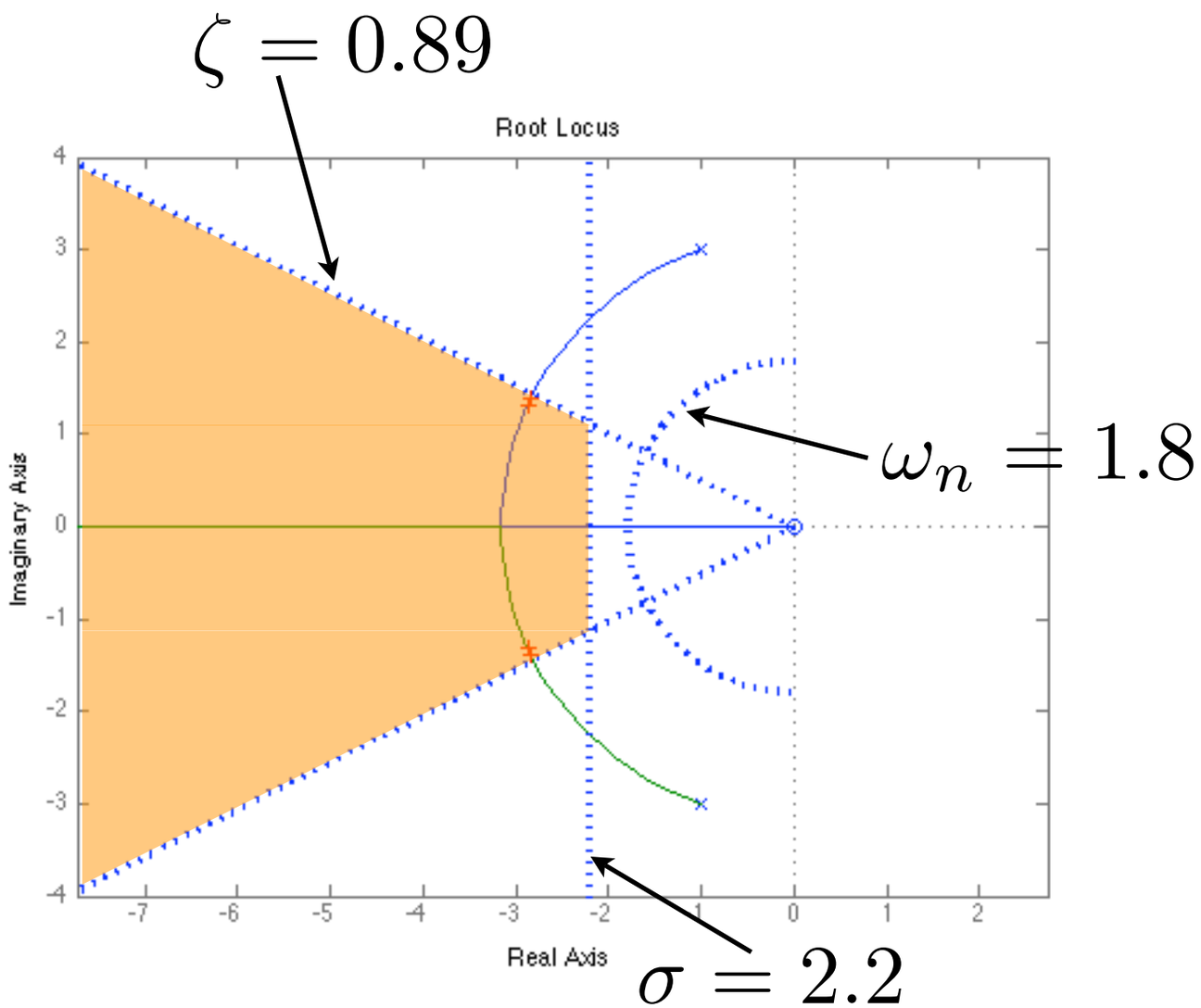
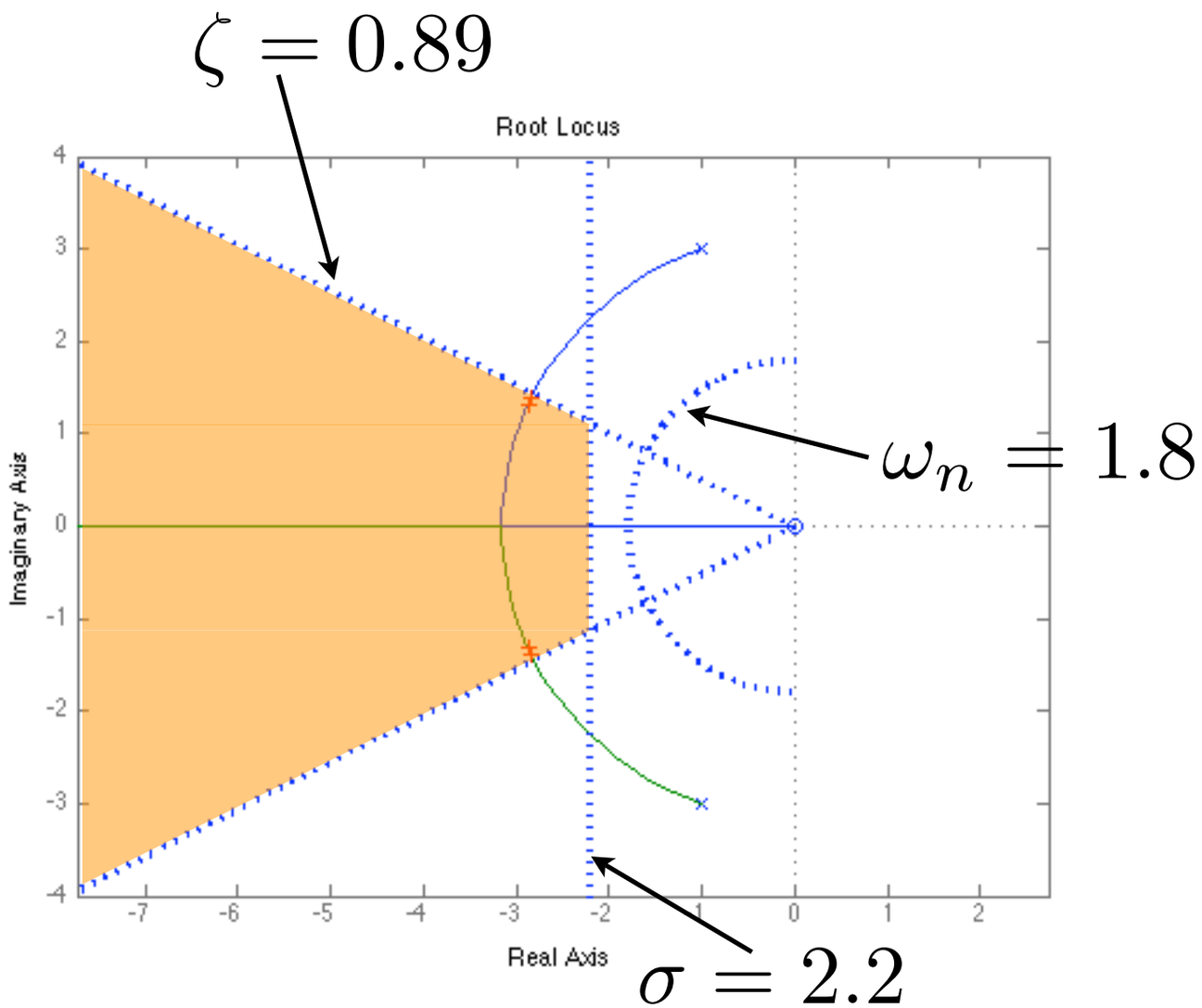
```
ki = 2;
L = tf([5 0],[1 2 5*ki]);
rlocus(L)
```

$$L(s) = \frac{5s}{s^2 + 2s + 10}$$




$\zeta = 0.89$
Root Locus
$\omega_n = 1.8$
$\sigma = 2.2$
Imaginary Axis
Real Axis
4
3
2
1
0
-1
-2
-3
-4
-7
-6
-5
-4
-3
-2
-1
0
1
2




```
>> [ki,R] = rlocfind(L)
Select a point in the graphics window

selected_point =

-2.8351 + 1.3789i

ki =

0.7375


R =

-2.8438 + 1.3831i
-2.8438 - 1.3831i
```

# MATLAB script

```
clear all
figure

ki = 2;
L = tf([5 0],[1 2 5*ki]);
rlocus(L)


%wn:
hold on;
r = 1.8;
th_vals = [pi/2:0.01:3*pi/2]';
circle_pts = [r*cos(th_vals), r*sin(th_vals)];
ph(1) = plot(circle_pts(:,1),circle_pts(:,2),'b:')
axis equal
%sigma:
ph(2) = plot([-2.2 -2.2],[-4 4],'b:');
% zeta:
theta = 63*pi/180;
zeta = sin(theta)
ys = [0:0.1:4]';
xs = -tan(theta)*ys;
ph(3) = plot(xs,ys,'b:');
ph(4) = plot(xs,-ys,'b:');
set(ph,'linewidth',3)
```