Nyquist diagram plotting. **

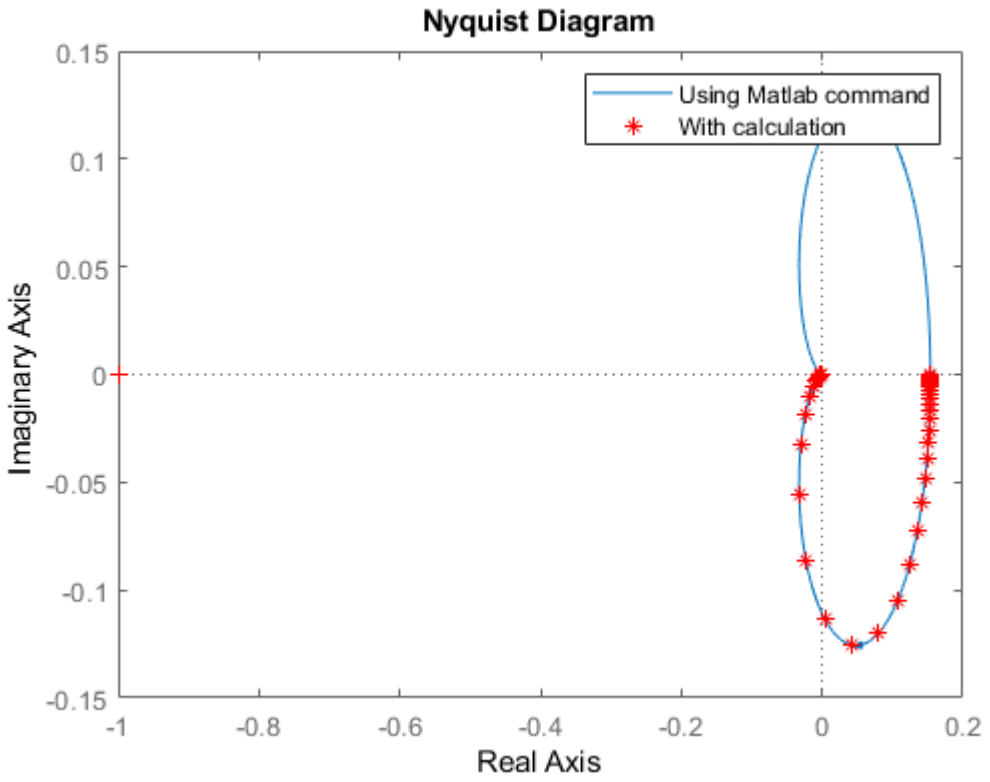
Let's suppose the next system : $H(s) = \frac{2}{s^2 + 5s + 13}$

You're asked to :

1. Compute the system frequency response (gain and phase in steady-state as answer to a sine wave), supposing the input signal's frequency changes from 0.001 to 1000000 rad/s, with 100 logarithmically spaced data.
2. Plot the Nyquist diagram of this system
3. Superimpose the computed values (at question 1) on the Nyquist plot.

Tips : tf('s') nyquist polar

Solution :




```
clear all
close all
w=logspace(-3,6,100);

% Nyquist plotting using the Matlab command
s=tf('s');
H=2/(s^2+5*s+13);
nyquist(H);
```

```
hold on

% Computing the frequency response by replacing the TF by a complex number
Hw=2./((1i*w).^2+5.*(1i*w)+13);
gain=abs(Hw);
ph=phase(Hw);

% Superimposition of the curves
polar(ph,gain,'*r')
legend('Using Matlab command','With calculation')
hold off
```