Bode/Nyquist/Step (continuous)

About the program:

With this program you can draw Bode and Nyquist diagrams of a continuous system you give, also it shows its impulse and step response.

The program has 3 different drawing modes:

Bode:
When drawing a Bode diagram the program shows the gain chart on the left side, and the chart of the phase on the right. The frequency chart is at the bottom of the diagram. The gain is shown in red, the phase in green.

Nyquist:
The program also draws the Nyquist diagram of the system. It is recommended to set the draw distance to 4 decades for a more precise figure.

Step:
In this mode the program draws the impulse and step response with red and green colour respectively.

How to use the program:

You can select between Bode, Nyquist and Step drawing mode with the selecting panel above the drawing window.

The input (system) can be given by the textfield on the bottom left corner of the program. The first and second are the system's numerator and denominator. Third one is the starting frequency. Starting frequency and denominator can not be 0.

The same syntax rules apply to setting the numerator and the denominator.
The polynomials of the numerator and the denominator must be given by listing their coefficients, starting from the highest grade component. These have to be divided by either a colon, or a space. Giving these as a product of polynomials is also possible. In that case, the polynomials must be enclosed in curly or square brackets, and in each polynomial, the coefficient of the highest grade component of the polynomial must come first.
For example: "1,4,4" or „(1,2)(1,2)" input represents the »$s^2 + 4s + 4$« system.

After giving the system, the diagrams can be drawn with the „Draw" button.
The checkbox next to the button enable:

- Phase in Bode mode
- Full Nyquist diagram in Nyquist mode
- Impulse response in Step mode

With the choicebox under the „Drawing distance" label the number of decades can be selected. It is 2 decades by default. With the choicebox below it, the frequency can be set to be in either rad/sec or in Hz.

With the „Show all" button over the „Draw distance" label a new window pops up showing all three modes at once. This function requires a high resolution display.

The text area in the bottom right corner shows more details and information about the system the program draws. It also show errors if there is a problem with the inputs given.