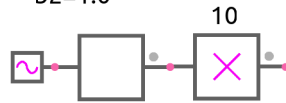


test_filter_4.sqproj

a0=100
a1=1.0
b0=100
b1=2
b2=1.0



flag_asymptote = 1

set global parameter flag_asymptote to

0 for actual plot

1 for asymptotic plot

Ref: B. P. Lathi

Signal processing and linear systems

Shown in the figure is a filter given by

$$H(s) = 10 \times \frac{a_0 + a_1 s}{b_0 + b_1 s + b_2 s^2} \quad (1)$$

Exercise Set

1. With the coefficient values as specified in the figure, draw the asymptotic gain and phase plots (Bode plots) for the filter for $0.1 \text{ Hz} < f < 1 \text{ kHz}$. The frequency and gain axes should be logarithmic, and the phase axis should be linear.
2. Compare your plots with simulation results obtained by setting the global parameter flag_asymptote to 1.

(Note that the output is equal to the transfer function since the filter input \mathbf{V}_i is set to 1∠0.)
3. Compare the asymptotic plots with the actual gain and phase plots obtained by setting flag_asymptote to 0.