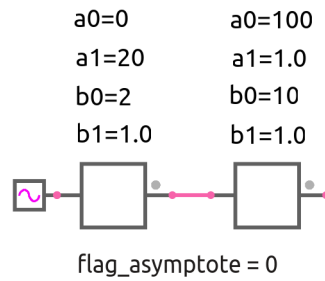


test_filter_5.sqproj



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

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

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 $0.1 \text{ Hz} < f < 10 \text{ kHz}$. 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 $1\angle 0$.)
3. Compare the asymptotic plots with the actual gain and phase plots obtained by setting `flag_asymptote` to 0.