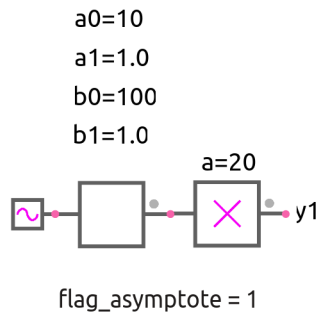


## test\_filter\_6.sqproj



set global parameter flag\_asymptote to  
0 for actual plot  
1 for asymptotic plot

Shown in the figure is a filter given by

$$H(s) = 20 \times \frac{a_0 + a_1 s}{b_0 + b_1 s}. \quad (1)$$

### 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  $0.01 \text{ Hz} < f < 1 \text{ kHz}$ . 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  $1\angle 0$ .)
3. Compare the asymptotic plots with the actual gain and phase plots obtained by setting `flag_asymptote` to 0.