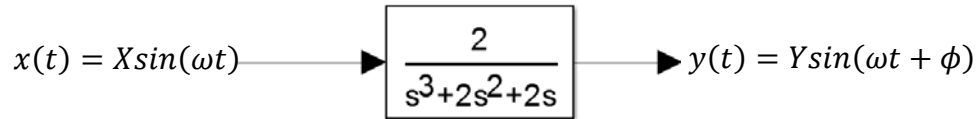


Explaining Gain Margin and Phase Margin

Suppose we have a system that has been modeled as the transfer function $G(s) = \frac{2}{s(s^2+2s+2)}$ and we want to know some additional information about the system. First, we will generate a Bode plot by setting up an open-loop system shown below. Our input is a sine wave with a particular amplitude (X) and frequency (ω). The output will also be a sine wave and it will have the same frequency as the input sine wave but with a phase shift (ϕ). The output sine wave amplitude (Y) will not necessarily be the same as the input sine wave amplitude.



By looking at the Bode plot, we can learn about the stability of the system if we were to close the loop.

