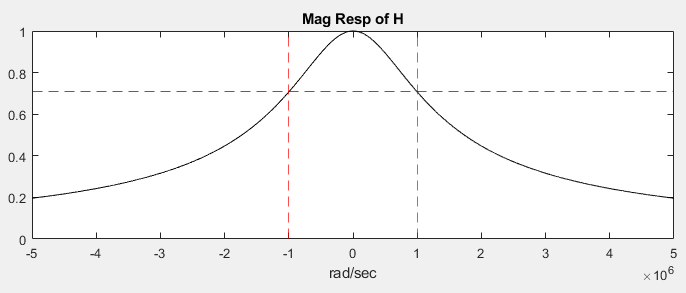


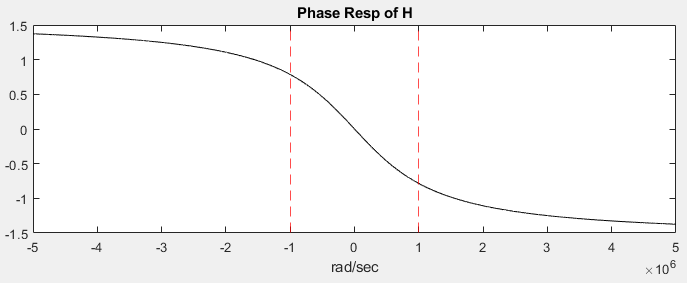
a) Use voltage division

Then,

Or,

b) Using MATLAB, where cutoff frequency is shown with dashed lines

.

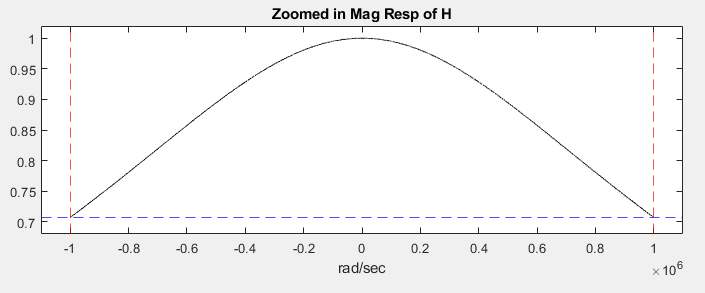


c) To transmit a signal without distortion two things are necessary

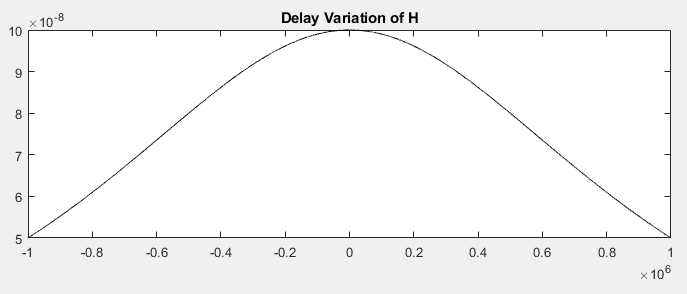
1. constant scale factor (magnitude response = constant)

2. constant delay variation (slope of phase response = constant)

Below is the Magnitude response. The scale factor changes from a minimum of 0.707 to a maximum of 1. This isn’t ideal but it is somewhat constant-ish over the pass region.



Below is the delay variation (slope of the phase delay). Over the pass band it varies from

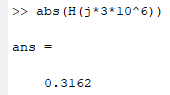


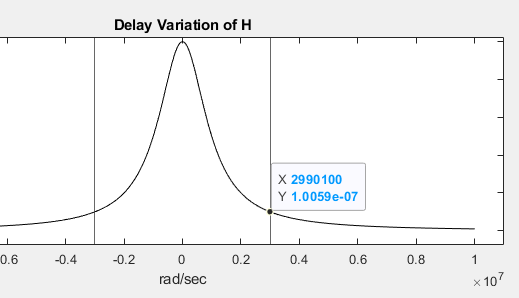
If signal is inputted to this system, you could expect an output of

Where:

d) From page 98 in book, output should have form



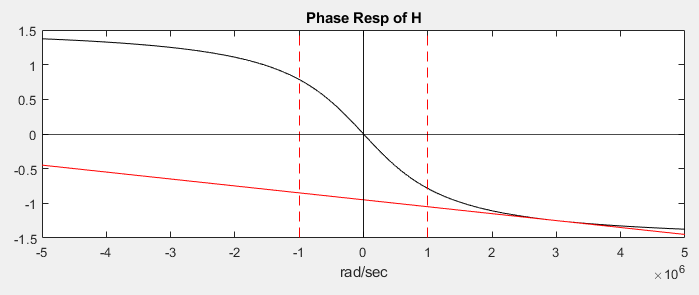




Using point slope we can find







Therefore,

