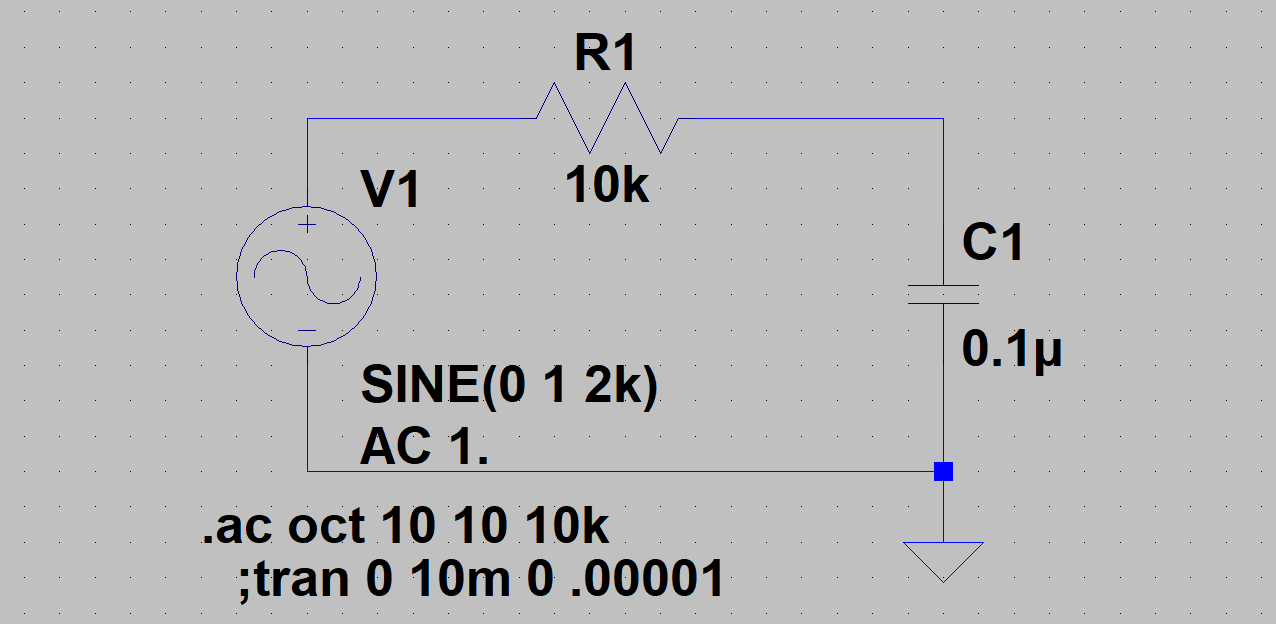
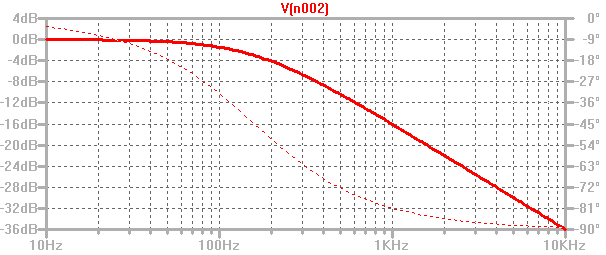
# RC Circuit AC analysis

Via LTspice simulation

Amplitude slope is asymptotically

-6 dB /octave or -20 dB / decade

Simulated RC – Frequency sweep from 10 Hz to 10 kHz Vc Amplitude and Phase plotted (log-log graph)

Note: Decibels are a logarithmic measure of voltage ratios dB = 20\*log10(VC/V1) in this case. (6 db is a factor of 2, 3 dB is the “half power point”)

Analysis:

V1 = 1\*sin(2πft) = 1 at 0°, VC = ?

Our current is therefore

so

and

This is at the “half power point” when the magnitudes of the real and imaginary parts are equal

2πf = 1/RC (Remember that RC is the “Time Constant”) or

and the phase at that frequency is 45°