**:** A second order electronic filter has the following transfer function

 With

 and

R = 10 MΩ

 C = 0.1 μ F

* If Vi = 1.5 sin (t) with t being the time in second. Determine the expression for Vo.
* Use Excel spreadsheet to computer the frequency response (gain and phase) of the above transfer function over the frequency range between 0.01Hz to 10 Hz.
* Chart out gain and phase Bode plots.
* Determine the resonance frequency of the system (Note: At the resonance frequency fr, the gain is at its maximum).
* Determine the roll-off rate of the transfer function.