1. For a random process given by 
   \[ m(t) = A \cos \omega_m t \]
   where \( A \) is a random variable:
   (a) Draw two examples of valid sample functions in the time domain.
   (b) Choose what is random: Amplitude, phase, or frequency.
   (c) If \( m(t) \) is a voice signal, what is the maximum frequency needed for useful speech? \( f \leq 4 \text{kHz} \)

2. Plot the frequency response of \( H(f) \) of this circuit and say what type of filter this is.

\[ H(f) = \frac{R}{R + \frac{1}{j\omega C}} \]

Find the 6dB cut-off frequency for this filter in terms of \( R \) and \( C \).