# Introduction to DSP: Systems - Assignment: Sampling revisted

1. Find the sampling minimum sampling frequency for the following signals:
   (a) $x(t) = \cos(5\pi t)$
   (b) $x(t) = \cos(5\pi t) + \cos(0.5\pi t)$
   (c) $x(t) = e^{-at} \cdot 1(t),\ a > 0$
2. A ideal reconstruction process of a sampled signal is to first genetate an continuous-time impulse train signal, following by a perfect low-pass filtering operation with a cut-off frequency of $F_s/2$, where $F_s$ is the sampling frequency. Consider the signal $x(t) = \cos(20\pi t)$, which is sampled at 12 Hz, and lowpass filtered using a ideal filter with cut-off frequency 6Hz. What will be the frequency of the reconstructed signal?