1. If a signal originally sampled at $f_s$ is reconstructed at (or played out an audio system with) a sampling rate of $f_s/6$, what change will occur in the signal’s
   (a) duration?
   (b) frequency?

2. For the sinusoidal signal shown below, determine the frequency and the duration of the segment, for each of the following sampling rates:
   (a) $f_s = 8$ Hz:
   (b) $f_s = 16$ Hz:

   ![Sample Index Diagram](image)

3. Determine the sampling rate and frequency of the following sinusoidal segment.

   ![Time (s) Diagram](image)

4. The following 2 questions relate to the Nyquist Theorem and aliasing/foldover:
   (a) What is the minimum possible sampling rate needed to accurately represent a 6-Hz sinusoid?
   (b) What would be the frequency of the sinusoid output by the DAC if a sampling rate of 8 Hz was used?

5. Given a bit depth of $n = 16$, determine the signal to quantization noise ratio (SQNR) for a signal that is at only at one quarter its maximum amplitude.