

Assignment 7

Due: 11/13/2017

(1) Consider a pure tone with frequency $f = 5$ Hz and amplitude $A = 5$.

(a) Write the equation representing this pure tone. $s(t) = 5 \sin(2\pi \times 5 t)$

(b) Draw a graph representing this pure tone.

(c) How long is one cycle? $1/5$ of a second

(2) Consider a pure tone with frequency $f = 8$ Hz and amplitude $A = 2$.

(a) Write the equation representing this pure tone. $s(t) = 2 \sin(2\pi \times 8 t)$

(b) Draw a graph representing this pure tone. Same as (1b) except $A=2$ + there are 8 cycles in one second

(c) How long is one cycle?
 $1/8$ of a second

(3) Suppose three pure tones with frequencies 1000 Hz, 2000 Hz, and 4000 Hz are playing at the same time. Write the equation representing this sound.

By superposition, $s(t) = \sin(2\pi \times 1000t) + \sin(2\pi \times 2000t) + \sin(2\pi \times 4000t)$

(4) What is the amplitude and frequency of the pure tone given by the equation $s(t) = 40 \sin(880t)$?

$$A = 40, \quad f = \frac{880}{2\pi} \approx 140 \text{ Hz}$$

