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**File Organisation - Note to TA:**
All of our exercise files are labeled "onepointx" where x is the name of the exercise. For part 2 of the lab, since it's all simulink, all of our files are simulink files labeled "simulink2xx" where xx represent which exercise the file corresponds to. (e.g simulink221 is our file for exercise 2.2.1).

All of our graphs that we need to fill in are labelled based on the exercise (e.g 1.1 is our 1khz sine wave for exercise 1.1). They are all .png files.

All of our answers to the questions on the answer sheet that need answers are here, the answer sheet in the .zip file is the one given to us, it has nothing in it.

**Exercise 1.1**
The Matlab file is listed as "onepoint1" in the .zip file. Here is our graph of 3 periods of the 1KHz sine wave
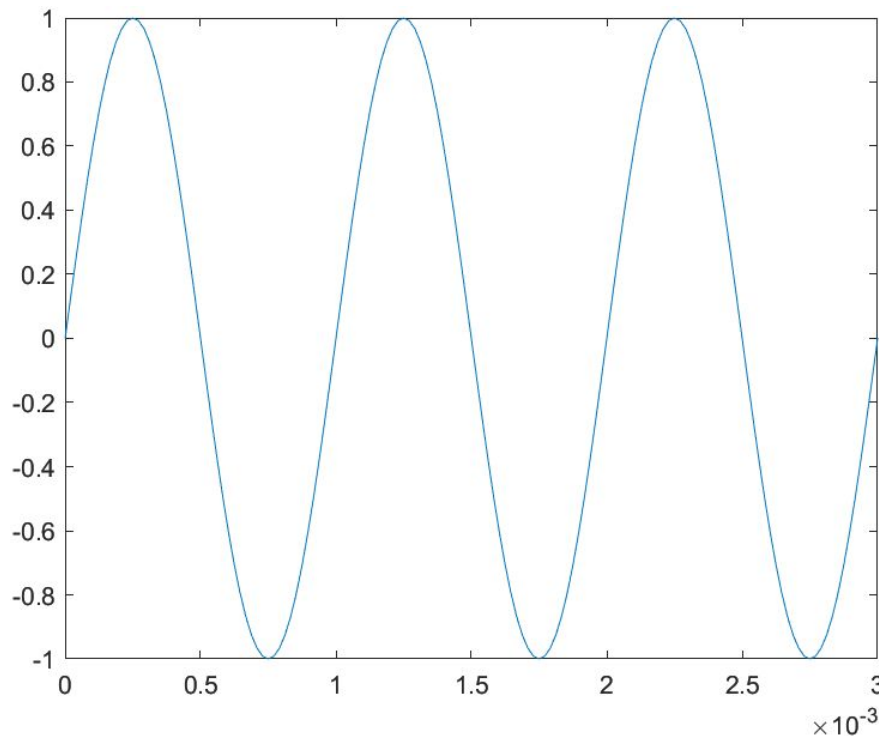
**Exercise 1.2**

A-D

As we increased the frequency the pitch got higher and as we decreased frequency the pitch got lower. It also seemed like the volume got louder as the pitch increased.

E

We were able to calculate the gain using the formula below where Vo is our amplitude before doubling the "voltage".

Gain = 20* log10 (2*Vo/Vo) = 6 dB

**Exercise 1.3**

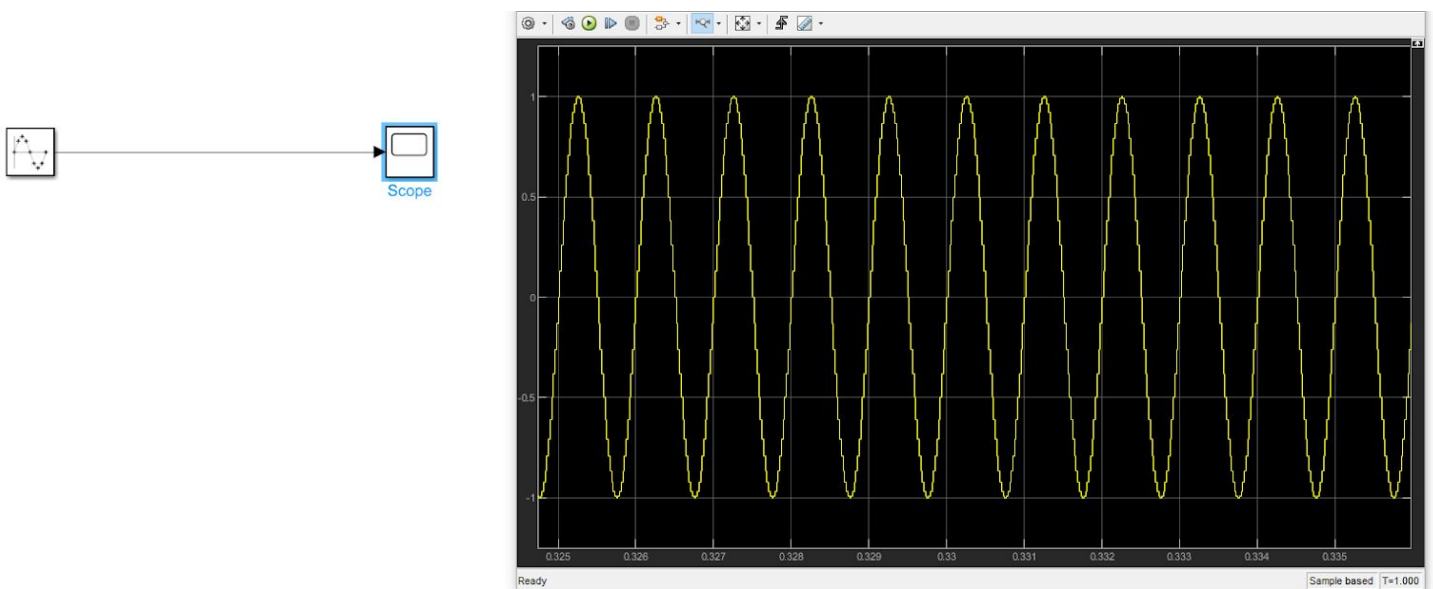   A) Duration of the guitar signals = 104.1516 seconds

We calculated this by dividing the number of items in the guitar vectors by the number of samples taken per second.

   B) See the file "onepoint3" for the file
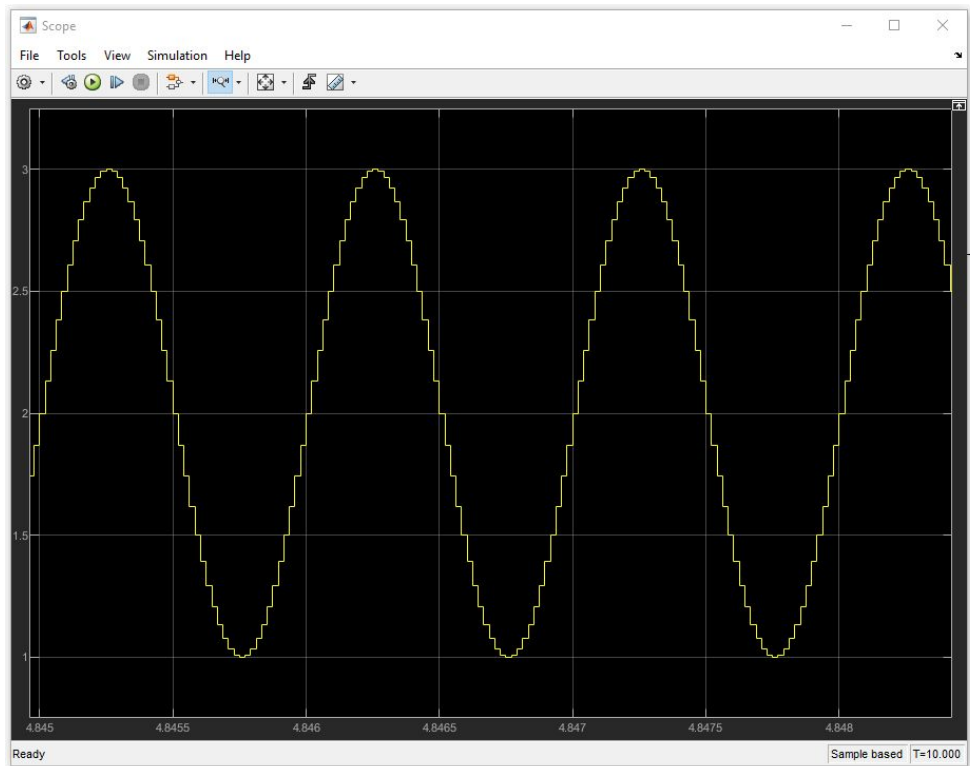   C) See the same file as above, both the gradually increasing sound and normal sound are there.

**Exercise 2.1**
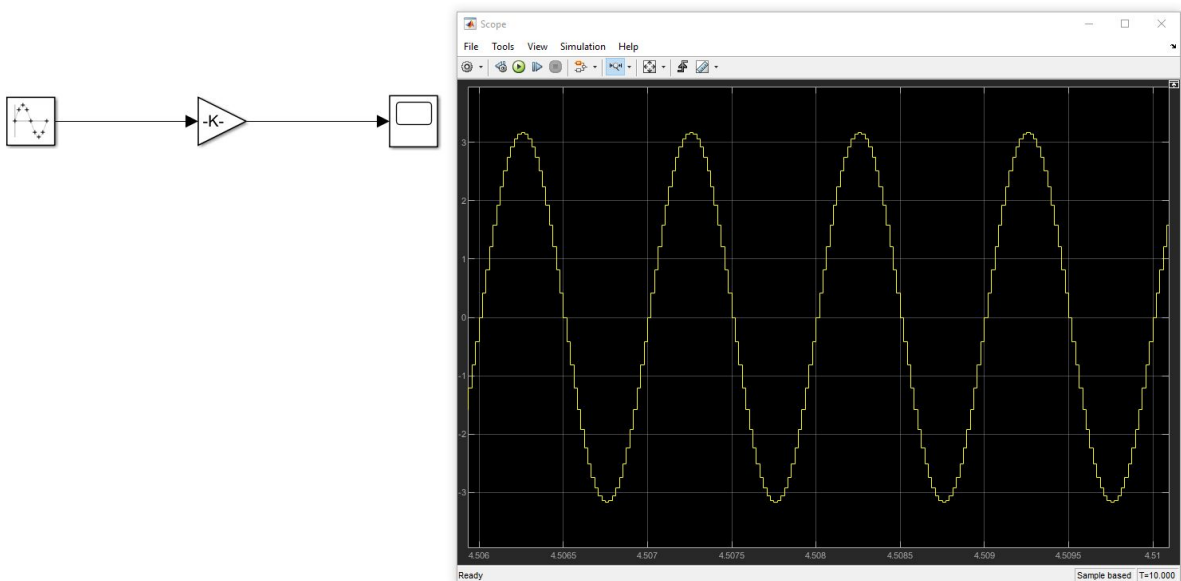
Here is our graph, for more detail, see "2.1.png"

**Exercise 2.2.1**

Here is our graph for this question, the simulink file is in the submission as well. Notice the +2 vertical offset.
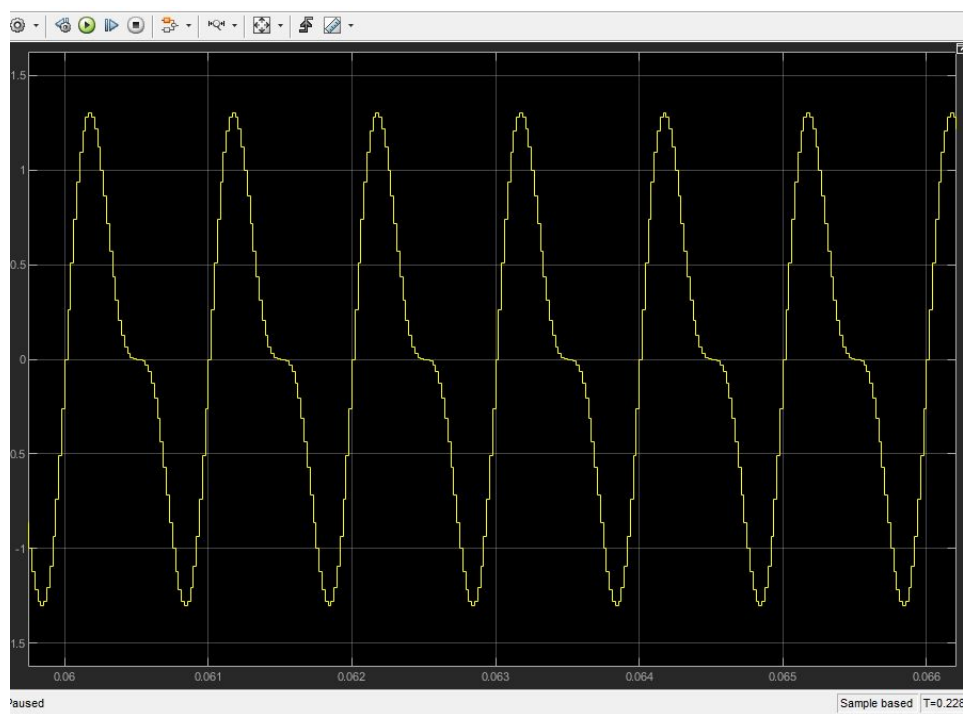


**Exercise 2.2.2**

Here is our model + graph. We calculated that a 10dB gain means approximately ~3 as our K value in the amplifier in our model.

**Exercise 2.2.3**

Here is the graph that corresponds to our model. If you wish to see the model it is located in the "simulink223" file.



**Exercise 2.2.4**

Graph of our two sinusoids, top one is at 500Hz, bottom one is at 31.25Hz and middle is the multiplication.