

NAME: _____

Pre-Lab 6:

Physics 1320

Fall 2026
Prof. Baker & Olness

THIS IS SIMPLE, AND YOU MUST DO IT BY HAND. NO CREDIT FOR COMPUTER PLOTS.

Problem #1) $x(t) = 100 \sin[1 t] + 50 \sin[2 t] + 33 \sin[3 t]$.

You are given the above wave form $x(t) = 100 \sin[1 t] + 50 \sin[2 t] + 33 \sin[3 t]$.

You will SKETCH (that means roughly accurate, but no overly so) both a time-domain and frequency-domain graph.

Let's start with the time-domain graph. Set up your axes so that the horizontal axis runs from $t=[0, 2\pi]$ seconds, and your vertical axis running from -200 to +200.

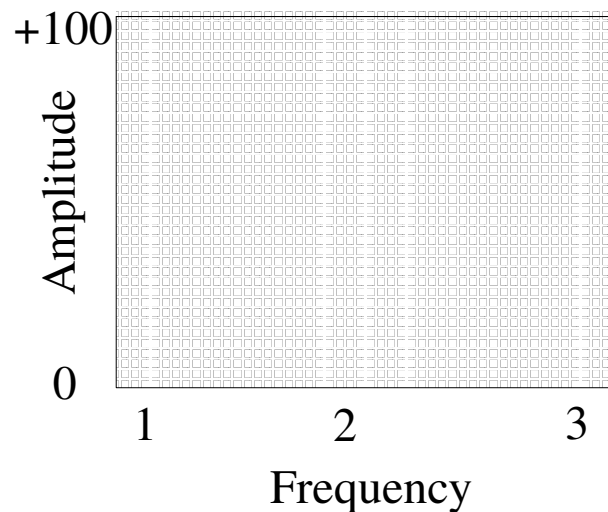
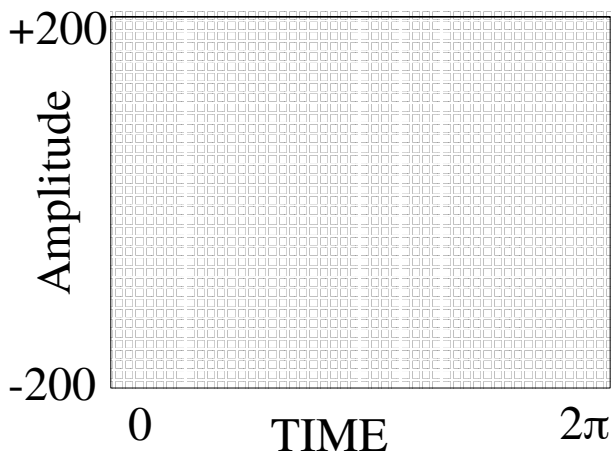
First sketch $100 \sin[t]$ over the time interval $t=[0, 2\pi]$ seconds.

Next, sketch $50 \sin[2 t]$ on the same plot.

Then, sketch $33 \sin[3 t]$ on the same plot.

Then, by eye, add up the three curves, and sketch this with a dark line.

A sample is shown below. (Do this on a large sheet of paper.)



Next, let's do the frequency-domain graph. Set up your axes so that the horizontal axis runs from frequency = 1 to 3, and your vertical axis from 0 to 100.

For each of the 3 frequencies {1,2,3}, make a bar chart showing the appropriate amplitude {100,50,30}.

Problem #2) Repeat the above exercise for:

$$x(t) = 100 \sin[1 t] + 0 \sin[2 t] + 33 \sin[3 t].$$