LAB 3:

Let's say that some piece of software
told you that one of your graphs was best described by the equation:

$$y = A\cos Bt + C$$

If so, what's $\frac{dy}{dt}$?

What's $\frac{d^2y}{dt^2}$?

In this case, can you say that

$$\frac{d^2y}{dt^2} = -(\text{constant})y?$$

If not, why not?

If so, this means that your data reveals simple harmonic oscillation of some kind, right?

If so, what's the constant?

If so, WHAT is harmonically oscillating? Is it an object? A type of numerical value?

If so, does that mean this whole lab is just another repeated look at just another oscillator?

Can you identify or describe any aspect of this lab
that was not already covered in either the spring or string labs of yester-week?

Look at the OTHER Graph.

If software said: $y = A \cos Bx + C$,

then what is $\frac{dy}{dx}$?

what is $\frac{d^2y}{dx^2}$?

Is THIS SHO?

Why or why not?

Imagine that a third, final and amazingly advanced piece of software asserted:

"Your two graphs tell me that you have two phenomena occuring at the same time — —
each of which bears a strong resemblence to SHO.

You are showing me two imperfect SHO's happening together.
But each one of them is imperfect in a different way.
And the imperfection fit together — — almost perfectly."

Would you agree with this software? disagree? understand? misunderstand?
think a lot about it and respond to the software with a long and considered answer...