Revolution of Jupiter's Moons

Turn in one copy of this lab with each group member's printed name and signature. By signing, you certify that you have actively participated in the exercise and have put forth effort in equal share to your fellow group members.

Printed Name	Signature
_____	_____
_____	_____
_____	_____
_____	_____

1. Record Jupiter's diameter in pixels: _____

2. What physical property does the amplitude of the sine curve represent? (The amplitude is how high it is from zero, or half the total height.)

3. What physical property does the wavelength of the sine curve represent? (The wavelength is the amount of time it takes to get back to the same position on the graph.)

4. Describe your fitting process. What was easy to determine? What made finding a good fit difficult?

5. Show how to get A.U. from a measurement of *pixels* using one point from your moon's data:

Note: In order of distance from Jupiter, the moons are: Io (closest), Europa, Ganymede and Callisto (farthest)

Table 1: Data

Moon	a (JD)	P (hours)
Io		
Europa		
Ganymede		
Callisto		

Table 2: Conversions

Moon	a (A.U.)	P (years)
Io		
Europa		
Ganymede		
Callisto		

Table 3: Calculating Jupiter's Mass

Moon	Mass of Jupiter (solar masses)
Io	
Europa	
Ganymede	
Callisto	
Average	

1. Compare the answers you got for the mass of Jupiter from the different moons. Did you get similar or different answers?

2. The mass you finally found is in units of *solar masses*. In other words, Jupiter is about 1/1000th the mass of the sun. Do you think Jupiter is big enough for its mass to matter when using Kepler's 3rd Law to find the mass of the Sun? Why or why not?