Hasibul Islam

Physics207-Lab#2

10/06/2016

Force Tables

Introduction

The purpose of this lab is to understand and gain knowledge of vectors and to learn about how to add vectors. In the lab, we're using the table of force able to accomplish. This enables us to establish equilibrium between the objects and by using mathematics and vector addition we can manipulate their equilibrium. Graphical and analytical methods will be utilized in the lab to add vectors.

Experiment 1: Sensitivity of the instrument

Sensitivity of the instrument: 10 grams

Experiment 2: Symmetric Arrangement

Step up two pans and mass systems based on values.

1. Mass 1: 25 grams

   Direction 1: 30 degree

2. Mass 2: 25 grams

   Direction 2: 330 degree

   We Choose Direction: 180 degree

Experimentally balanced of the system is 140 grams.

Also we find experimentally balanced of the system is 131 grams.

Experiment. 3: Find a Function

Formula: (p1+p2)cosb=p3

Angle (Degree)	Mass of P3 System
5	190g
10	190g
15	180g
20	170g
25	170g
30	160g
35	150g
40	150g
45	150g
50	130g
55	120g
60	110g
65	90g
70	70g
75	50g
80	Not to Do?

Vector Component

Angle Ax=

Angle Ay=

Experiment 4: Return to the Force Table

Vector A

Vector B

Vector C

Vector D

Lab Question

Question 1

What factors contribute to the sensitivity?

- The major factors that contribute to the sensitivity are tension, weight, human error in calibration and the angle of the pan.
- Experiment#1

Question 2

Report the difference between what you've experimentally measured and what the simulation predicted.

- The experiment of this lab to measured sensitivity, which is measure we got 10grams.
- Experimentally balanced of the system is 140 grams.
- Also we find experimentally balanced of the system is 131 grams.

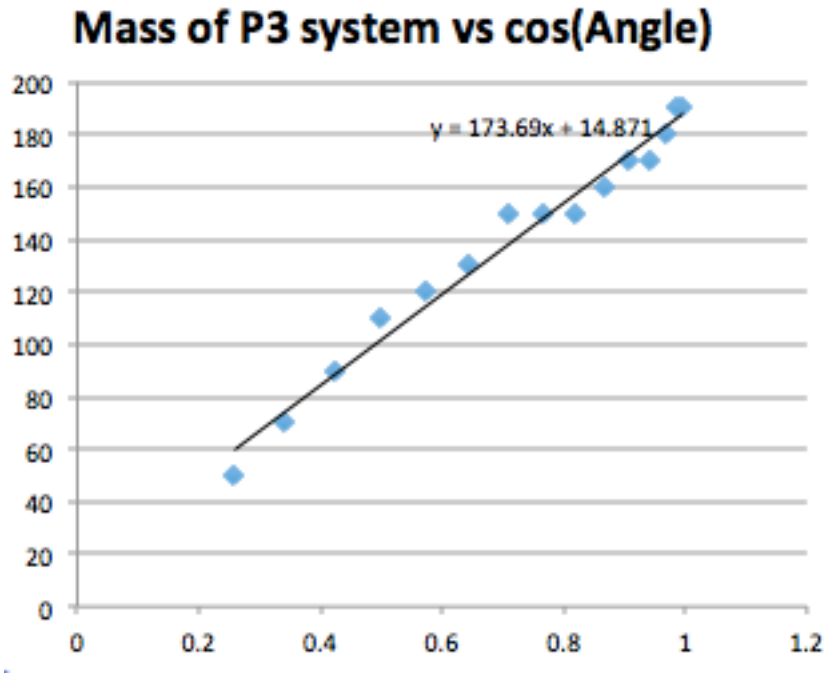
Are they within the expected sensitivity of the instrument?

- Agree with the sensitivity of the instrument

Question 3

On one graph plot the experimental data from your table along with the analytical prediction of the function you found. Do they follow the same trend?

Angle (degree)	cos(Angle)	Mass of P3 system
5	0.996195	190
10	0.984808	190
15	0.965926	180
20	0.939693	170
25	0.906308	170
30	0.866025	160
35	0.819152	150
40	0.766044	150
45	0.707107	150
50	0.642788	130
55	0.573576	120
60	0.5	110
65	0.422618	90
70	0.34202	70
75	0.258819	50



Question 4

Give the details of this calculation and compare your analytical results with the experimental results. Draw a vector diagram that shows the table arrangement.

The details of this calculation, first we did multiplying the mass of g=9.8 m.s^2 with vector to find the vector.

Conclusion

Throughout this lab showing how to knowledge of adding vector and then we were able to correlate this equilibrium condition with vector addition. But the relation with mathematical procedures and their relations are applied to maintain equilibrium. Experiment of the lab is harder than I thought but to calculate all to experiment is become more easier and excel make easier to see the accurate slope.