# Lab 2: Position, Velocity and Acceleration

Experiment for Physics 225 Lab at CSUF

## What You Need to Know

## What You Need to Do

### Part 1: Zero Acceleration

Part 1 Screenshot



Was the velocity of the cart constant? If so, what was its value and over how big a region was it constant? Explain how you can tell.

Was the acceleration zero? Report its (average) value. Discuss why the acceleration is not perfectly constant or zero.

### Part 2: Constant Acceleration with Zero Initial Velocity.

Part 2 Screenshot

Was the acceleration of your cart “constant”? Take an approximate average value for the acceleration and report that number.

### Part 3: Constant Acceleration in Opposite Direction of Initial Velocity.

Part 3 Screenshot 1

Part 3 Screenshot 2

Was the acceleration constant for the two different v0 values? Determine the region where it was constant and report the average values of the acceleration.

Compare the values from Question 4 to the acceleration you found in part 2. What do you expect the relationship between the three values to be? Do your results agree with what you expect?



From the velocity vs. time graphs:

a) Locate the position of the turning point (i.e. the corresponding time). Find the position of the cart at this value of the time and record it for both of your v0 values. Also record the v0 values.

b) From the v0 and *a* values, determine a formula for the expected position of the distance away from the release point where the cart turns around.

c) Using the values for v0 and *a* that you determined in Part 3 and your formula from this question part b), calculate the position of the turning point of the cart for the two different initial velocities.

d) Compare these values with the measured values by calculating % differences. Are the values in approximate agreement?

## Conclusion

Follow the lab report guide to write a conclusion on this lab.

Submit any excel or graphical analysis data your instructor requests along with your report.

Conclusion