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2019 Course: Physics 2211L-

Evening

Lab: Constant Acceleration 1-D Motion and Data Fitting

Grade:_____(Filled in by Grader)

1. Objective:

The goal for this lab was to find the difference in acceleration between an object on two different planets. We are also capable of finding X_i, V_i, and the acceleration graphically and using the kinematic equations given.
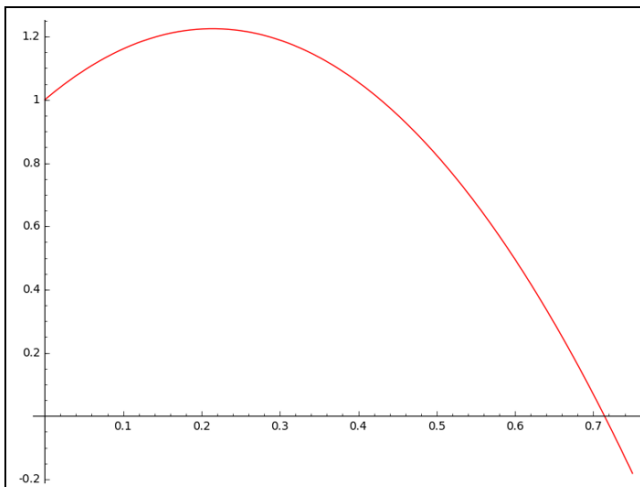
2. Data:

a. Part 1

```
1  t=var("t")
2  p1=plot(1+2.1*t+0.5*-9.8*t*t,(t,0,0.75),color="red")
3  g=Graphics ()
4  g+=p1
5  g.show()
```

b. Part 2

$x_i = 0$ m, $V_i = -5$ m/s, a = 5 m/s^2 (This is the red line)

$x_i = 0$ m, $V_i = 2$ m/s, a = -4 m/s^2 (This is the blue line)

$x_i = 8$ m, $V_i = 4$ m/s, a = 3m/s^2 (This is the green line)

Brief explanation: Green line: the position starts at 8m

Blue line: Because the acceleration is negative, the position will eventually move downwards

Red line: Because the acceleration is positive; the position of the object, although it has a negative initial velocity, will eventually move up
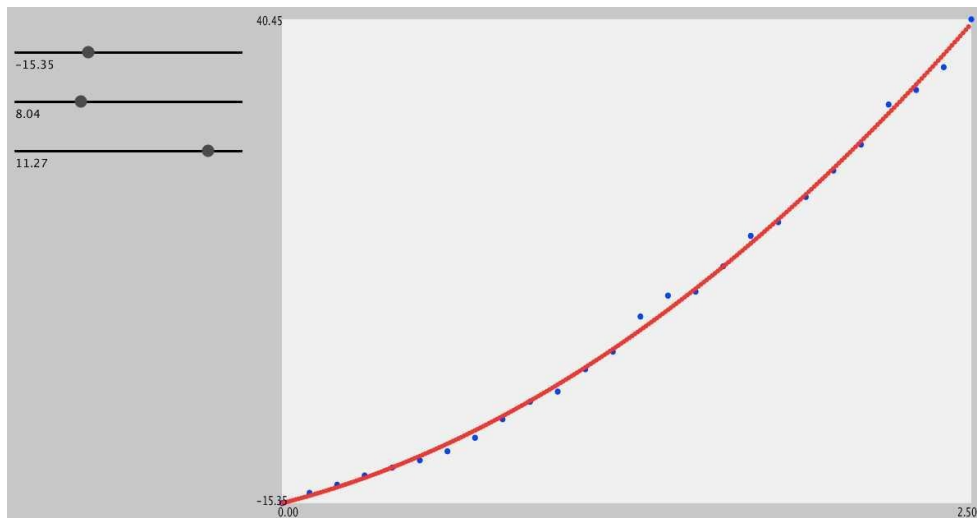

c. Part 3

Planet 1

20.20

20.20

−13.01

7.80

9.50

0.00

2.50

Planet 2

40.45

−15.35

8.04

11.27

−15.35

0.00

2.50
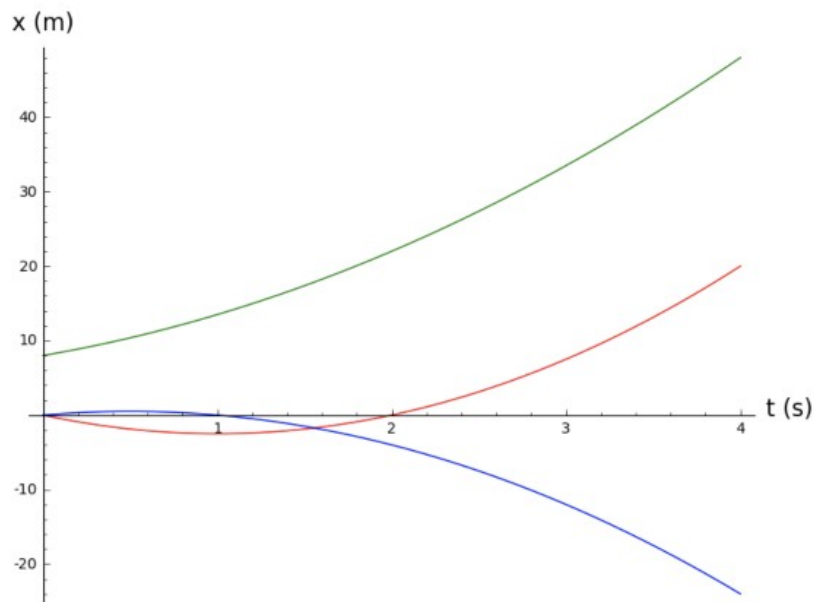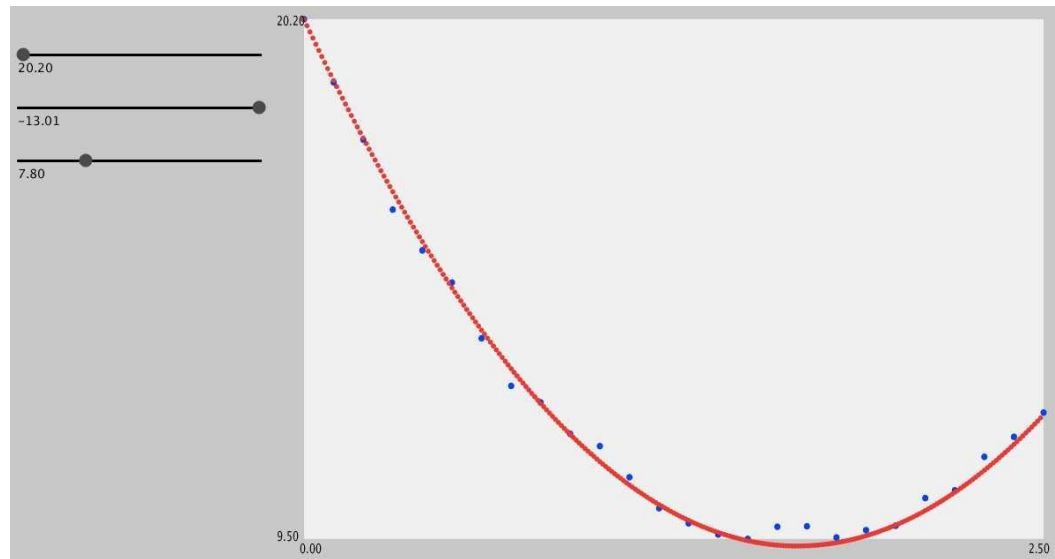
3. **Calculations:** For this lab, there were no hand-written calculations. The computer program that we used in class calculated and gave us the initial velocity and gravitational acceleration.

4. **Results:**

	X_i	V_i	Acceleration	Axis	Magnitude and Distance	Starting Point

Planet 1	20.20m	-13.01 m/s	7.80 m/s^2	Up	Up, Down	20.20 m
Planet 2	-15.35 m	8.04 m/s	11.27 m/s^2	Down	Down, Down	15.35 m