**AP Physics C Lab #1– Numerical Analysis** Name _____

Grade _____

Use graphs and curve fitting to answer the following questions.

1) A ball is dropped from rest at time t = 0. Find a value for the acceleration due to gravity ***g*** using a linear regression of the data given below.

Sketch Graph below

| Distance (m) | Time (s) |
|---|---|
| 5 | 1 |
| 19.8 | 2 |
| 44.7 | 3 |
| 79.5 | 4 |
| 124.1 | 5 |

Acceleration = _____

2) A force is measured at several distances from a point and the data is shown below. Use a linear regression to write an equation for the force in terms of the distance and a constant. Be sure to use the physics variables F (force) and x (distance) along with your value of the constant in your equation.

Sketch Graph below

| Force (N) | Distance (m) |
|---|---|
| 50 | 0.2 |
| 12.5 | 0.4 |
| 5.6 | 0.6 |
| 3.1 | 0.8 |
| 2 | 1.0 |

Equation _____

3) The distance of a car from a given point is measured every second for a six second interval as shown below. The car is undergoing linear motion. Give a value for the initial position, initial speed and acceleration of the car. (Do not use a linear regression for this graph)

Sketch Graph below

| Position (m) | Time (s) |
|---|---|
| 9 | 1 |
| 15 | 2 |
| 23 | 3 |
| 33 | 4 |
| 45 | 5 |
| 59 | 6 |

Initial Position _____ Initial speed _____ Acceleration _____