

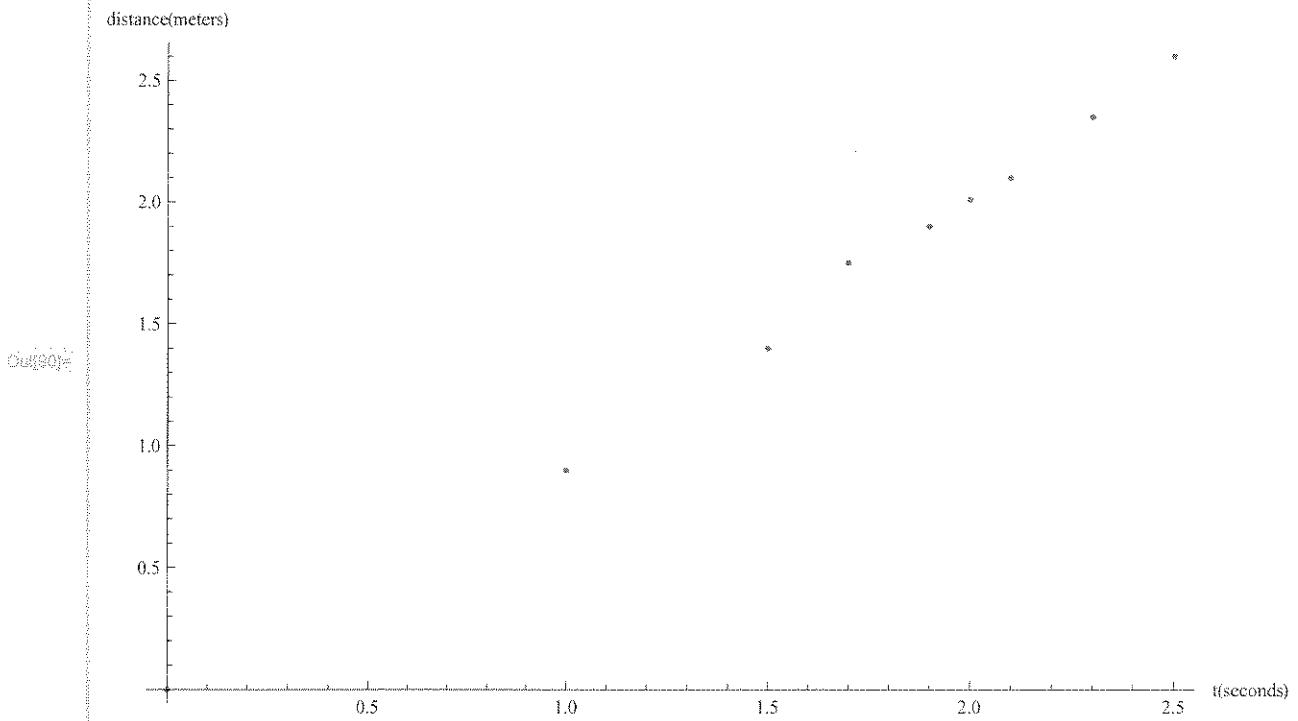
Class Example 1

Note : Use Insert Table/Matrix, check table, give dimensions.

```
In[88]:= DataNew = {{0, 0}, {1, 0.9}, {1.5, 1.4}, {1.7, 1.75}, {1.9, 1.9}, {2, 2.01}, {2.1, 2.1}, {2.3, 2.35}, {2.5, 2.6}}
```

```
Out[88]= {{0, 0}, {1, 0.9}, {1.5, 1.4}, {1.7, 1.75}, {1.9, 1.9}, {2, 2.01}, {2.1, 2.1}, {2.3, 2.35}, {2.5, 2.6}}
```

```
ListPlot[DataNew, AxesOrigin -> {0, 0},  
AxesLabel -> {"t(seconds)", "distance(meters)"}]
```



- * What was the robot's average speed during the test?

$$\text{AverageSpeed} = \frac{\text{Total Distance}}{\text{Total Time}} = \frac{\text{Distance}}{\text{Time}} \text{ or Rate} = \frac{\text{Distance}}{\Delta \text{Time}}$$

** In this situation speed = velocity

Note: // N gives decimal answer, when you type a ";" it means the answer will be saved in the computer's virtual memory, i.e. won't be displayed. Use the print command to display with units for clarification.

```
In[56]:= AverageSpeeda = (2.6 - 0) / / N;
Print[AverageSpeeda, "m/s"]
```

$$1.04 \frac{\text{m}}{\text{s}}$$

- * What was the robot's average velocity between 1.7 and 2 seconds?

```
In[105]:= AverageSpeedb = (2.01 - 1.75) / / N;
Print["Average Speed = ", AverageSpeedb, "m/s"]
```

$$\text{Average Speed} = 0.866667 \frac{\text{m}}{\text{s}}$$

- What was the robot's instantaneous velocity between at 2 seconds?

```

In[103]:= AverageSpeedc1 =  $\frac{2.1 - 2.01}{2.1 - 2} // \text{N};$ 
AverageSpeedc2 =  $\frac{2.01 - 1.9}{2 - 1.9} // \text{N};$ 
Print["Instantaneous Velocity = ",
 $\frac{(\text{AverageSpeedc2} + \text{AverageSpeedc1})}{2} // \text{N}, \frac{\text{m}}{\text{s}}]$ 

```

Instantaneous Velocity = $1. - \frac{\text{m}}{\text{s}}$

? Point

`Point[coords]` is a graphics primitive that represents a point.
`Point[{coords1, coords2, ...}]` represents a collection of points. >>

Class Example 2

```

f[t_] = 40 t - 16 t2;
Show[Plot[f[t], {t, 0, 2.5}, AxesOrigin -> {0, 0},
AxesLabel -> {"t(seconds)", "distance(meters)"}, 
Epilog -> {PointSize[Large], Point[{{2, 16}, {2.5, 0}}]}]

```

