Problem Set 2

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Part I

1. Definition of expectation:

$$E[X] = \int_{s \in \Re} p(s)\, sds$$

2. Definition of variance:

$$V[X] = E\left[X^2\right] - E[X]^2 = \int_{s \in \Re} p(s)\, s^2 ds - \left(\int_{s \in \Re} p(s)\, sds\right)^2$$

3. Definition of $E[Y|X]$:

$$E[Y|X = x] = \frac{\int_{s \in \Re} p(x, s)\, sds}{p_X(x)}$$

4.

```
require(data.table)
```

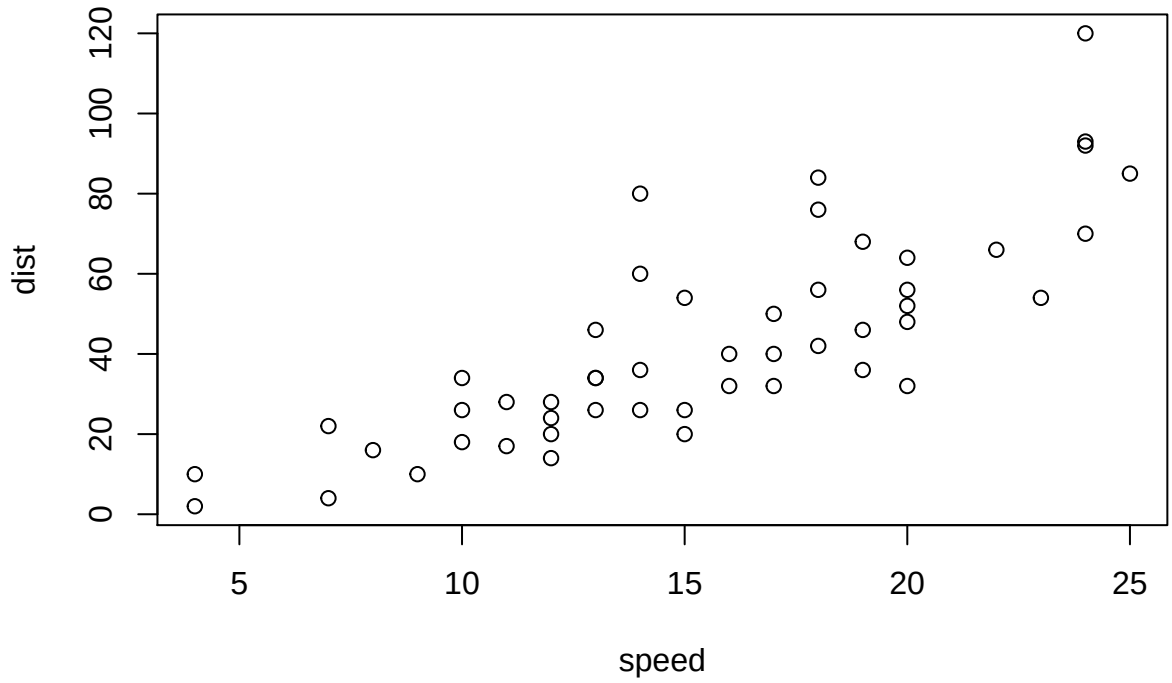
```
## Loading required package: data.table
```

```
## data.table 1.11.4  Latest news: http://r-datatable.com
```

```
set.seed(11) #A seed for me

dt = data.table()
```

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.