There are six pre-described line types available in base R. You can use those for any type of graphics, like plotting for line charts or developing simple shapes.

In R base plot functions, two options are available **lty** and **lwd**, **lty** stands for line types, and **lwd** for line width. The type of line you can be specified based on a number or a string. In R the default line type is “solid”.

In the case of **ggplot2** package, the parameters **linetype** and **size** are used to decide the type and the size of lines, respectively.

In this tutorial describes how to change line types in R for plots created using either the R base plot or from the ggplot2 package.

Visualization Graphs-ggside with ggplot »

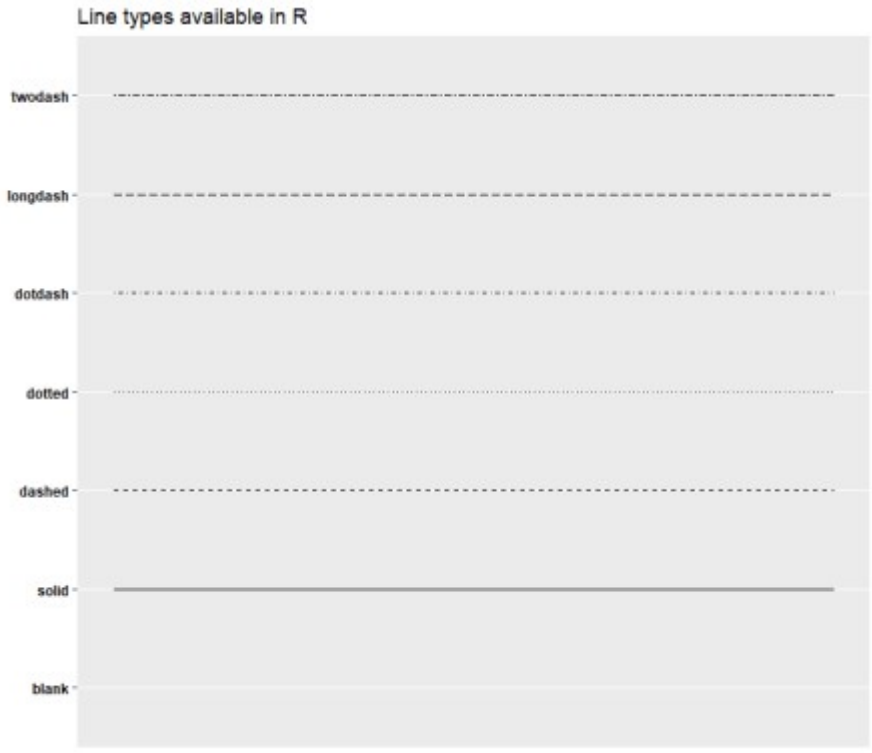
You will understand how to:

1. Use the different types line graphs in R.
2. Plot two lines and modify the line style for base plots and ggplot
3. Adjust the R line thickness by specifying the options lwd and size.
4. Change manually the appearance of linetype, color and size

Different line types in R

From ggpubr package with single line of code we can show the list of line types available in R.

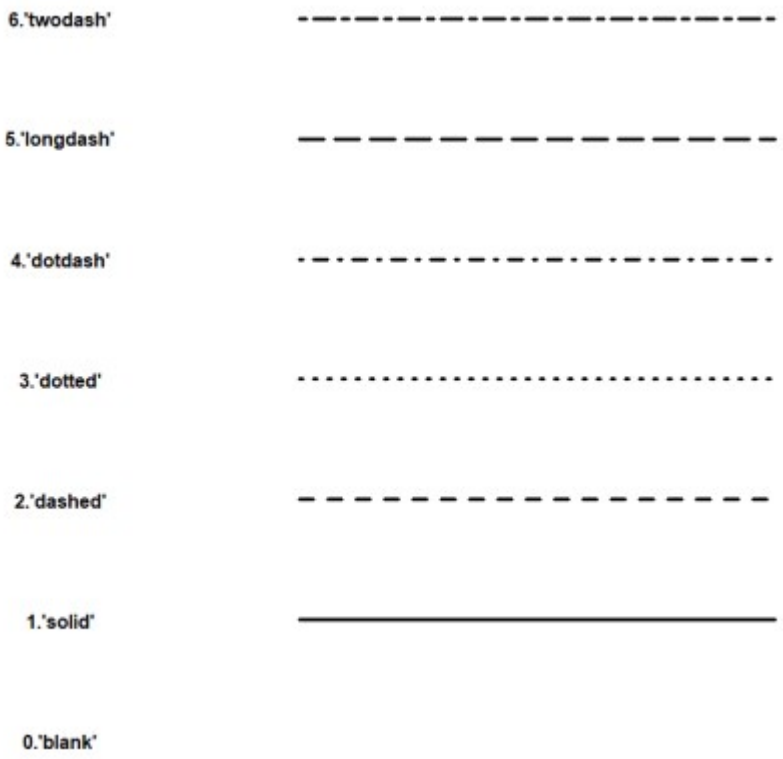
```
library(ggpubr)
show_line_types()
```



We cam make use below function and write clear labels with number and string.

```
LineTypes<-function(){
```

```
  oldPar<-par()  par(font=2, mar=c(0,0,0,0))
  plot(1, pch="", ylim=c(0,6), xlim=c(0,0.7),  axes=FALSE,xlab="",
ylab="")
  for(i in 0:6) lines(c(0.3,0.7), c(i,i), lty=i, lwd=3)
  text(rep(0.1,6), 0:6, labels=c("0.'blank'", "1.'solid'",
"2.'dashed'", "3.'dotted'",
                                 "4.'dotdash'", "5.'longdash'",
"6.'twodash'"))
  par(mar=oldPar$mar,font=oldPar$font )}
LineTypes()
```



Change R base plot line types

R lines functions:-

```
plot(x, y, type = "l", lty = 1). Create the main plot
lines(x, y, type = "l", lty = 1). Add lines onto the plot.
```

Key options:

- x, y: variables to be used for the x and y axes.
- type: display the data as line and/or point. Lowed values: l (display line only), p (show point only), and b (show both).
- pch and cex: setpoints shape and size, respectively.
- lty, lwd: set line types and thickness.
- col: change the color of point and line.
- xlab and ylab: for x and y-axis labels, respectively.

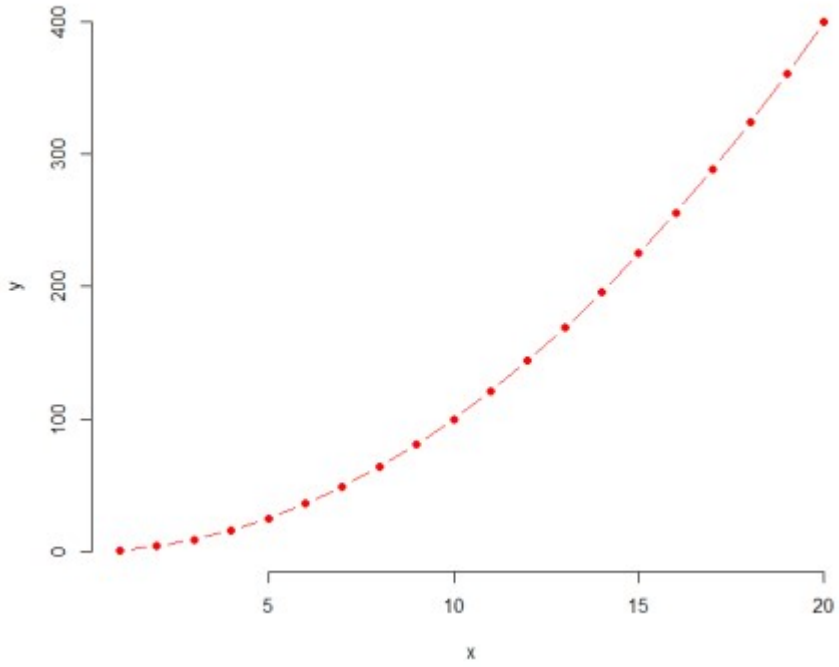
Create some variables for visualization,

Principal component analysis (PCA) in R »

```
x <- 1:20
y1 <- x*x
y2  <- 1*y1
```

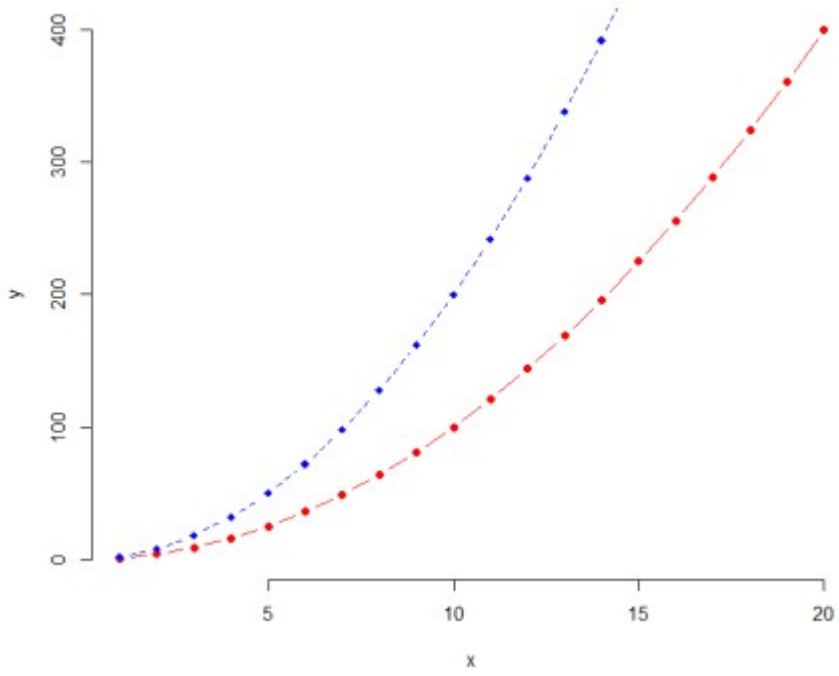
Just plot a first line based on plot function in R,

```
plot(x, y1, type = "b", frame = FALSE, pch = 19,
     col = "red", xlab = "x", ylab = "y",
     lty = 1, lwd = 1)
```



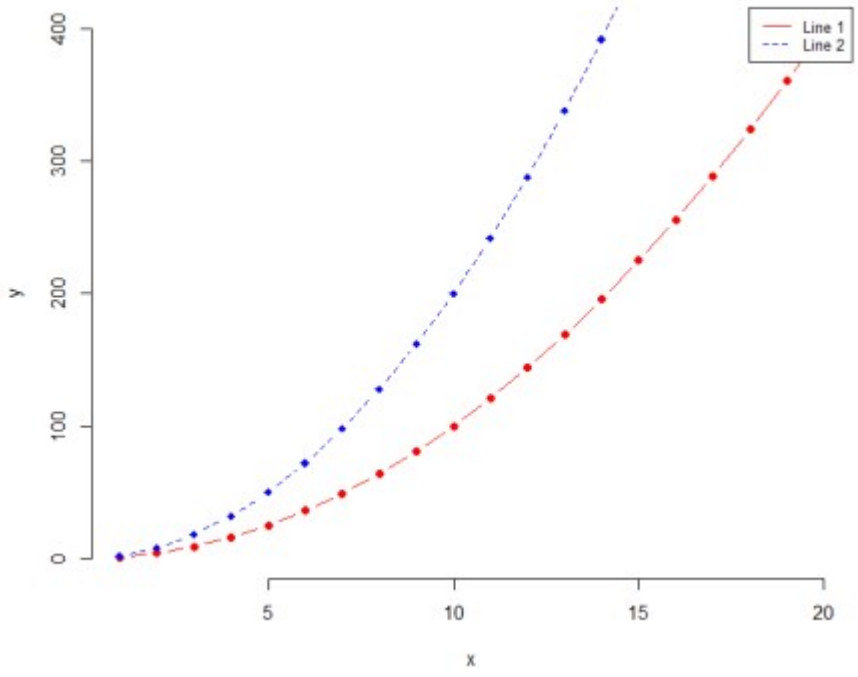
Now Add a second line

```
lines(x, y2, pch = 18, col = "blue", type = "b",lty = 2, lwd = 1)
```



If you want you can add a legend to the plot and set legend lty

```
legend("topright", legend = c("Line 1", "Line 2"),
       col = c("red", "blue"), lty = 1:2, cex = 0.8)
```



Line Types in ggplot

First, let's load the data set.

Decision Trees in R » Classification & Regression »

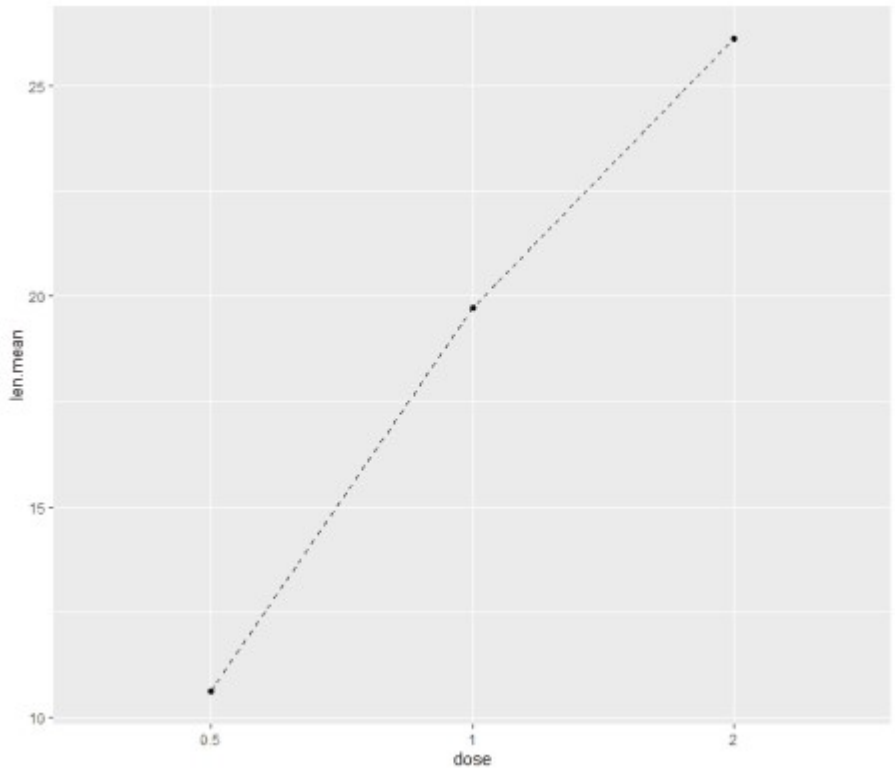
```
ToothGrowth$dose <- as.factor(ToothGrowth$dose)
head(ToothGrowth)
    len supp dose
 1  4.2   VC  0.5
 2 11.5   VC  0.5
 3  7.3   VC  0.5
 4  5.8   VC  0.5
 5  6.4   VC  0.5
 6 10.0   VC  0.5
library(dplyr)
df <- ToothGrowth %>%
  group_by(dose) %>%
  summarise(len.mean = mean(len))
df
```

Now created average values based on group by dose.

```
   dose len.mean
 1  0.5   10.605
 2    1   19.735
 3    2   26.100
```

Let's plot the same

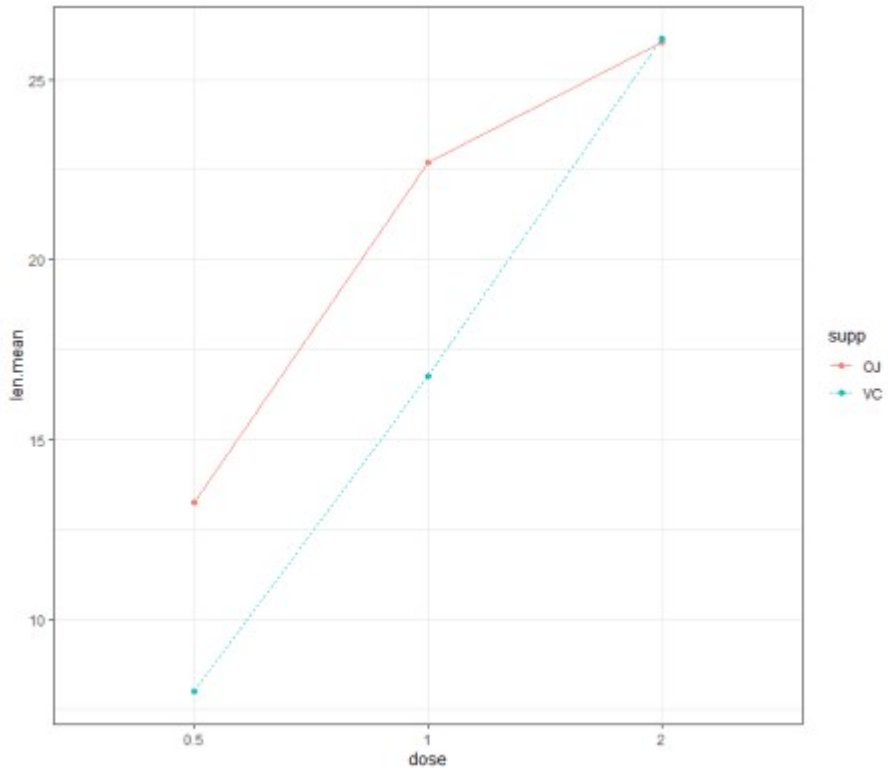
```
library(ggplot2)
ggplot(data = df, aes(x = dose, y = len.mean, group = 1)) +
  geom_line(linetype = "dashed")+
  geom_point()
```



Create a line plot for multiple groups

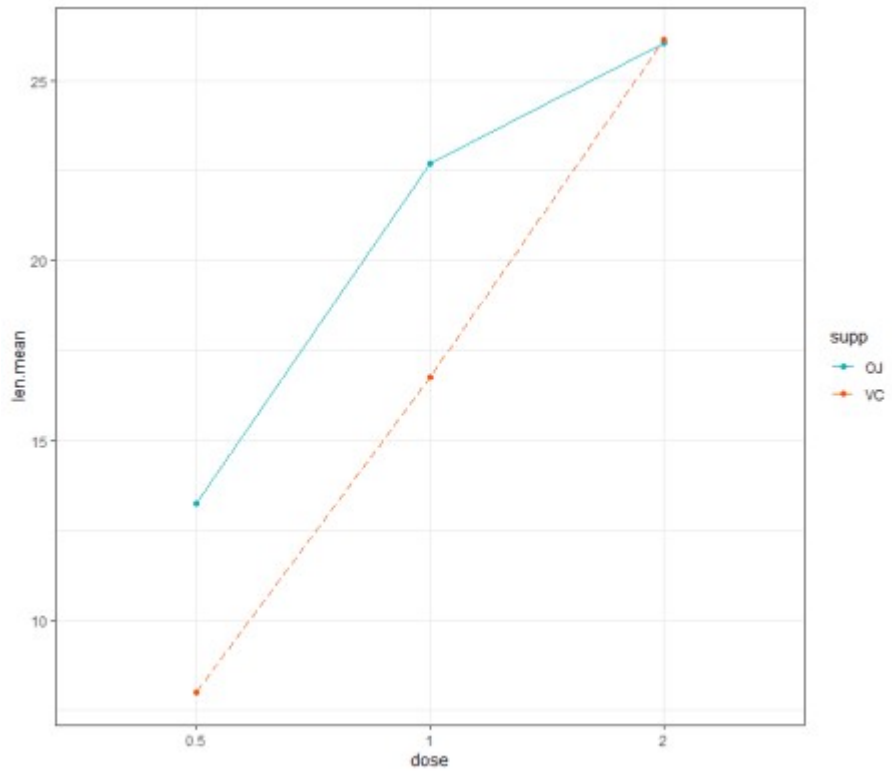
KNN Algorithm Machine Learning » Classification & Regression »

```
library(dplyr)
df2 <- ToothGrowth %>%
group_by(dose, supp) %>%
summarise(len.mean = mean(len))
df2
    dose supp len.mean
 1  0.5   OJ    13.23
 2  0.5   VC     7.98
 3    1   OJ    22.70
 4    1   VC    16.77
 5    2   OJ    26.06
 6    2   VC    26.14
ggplot(df2, aes(x = dose, y = len.mean, group = supp)) +
   geom_line(aes(linetype = supp, color = supp))+
   geom_point(aes(color = supp))+theme_bw()
```



Now change line type and color manually

```
ggplot(df2, aes(x = dose, y = len.mean, group = supp)) +
   geom_line(aes(linetype = supp, color = supp))+
   geom_point(aes(color = supp))+theme_bw()+
   scale_linetype_manual(values=c("solid", "longdash"))+
scale_color_manual(values=c("#00AFBB","#FC4E07"))
```



Conclusion

Use **lty** and **lwd** options, for changing lines type and thickness in R base graphics and in ggplot **linetype** and **size** are used.