Lab 2

Key

September 26, 2018

1. Run the following code to

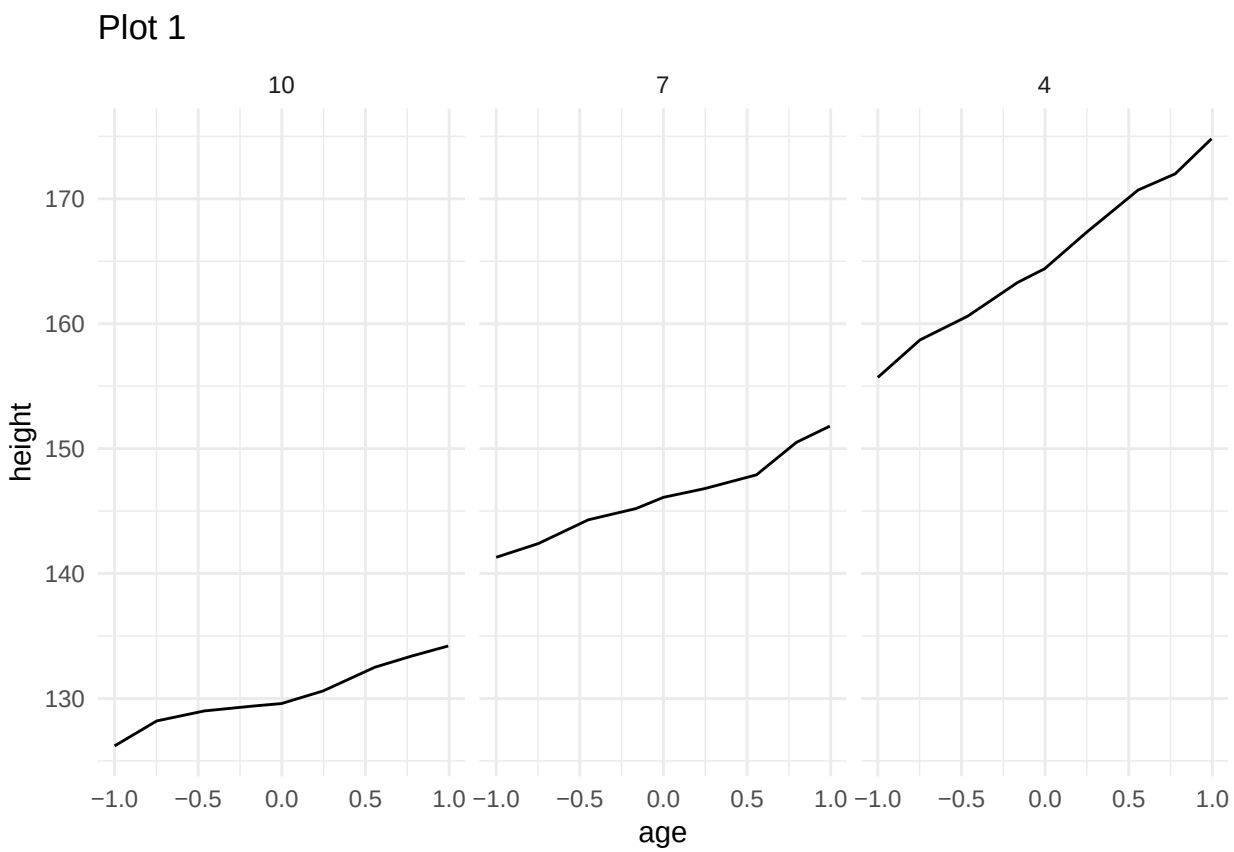
(a) install the {nlme} and {janitor} packages
(b) load the packages along with the tidyverse, and
(c) access and quickly prep some data (from the {nmle} package) for plotting.

```
#install.packages(c("nlme", "janitor"))
library(nlme)
library(janitor)
library(tidyverse)
pd <- Oxboys %>%
  clean_names() %>%
  mutate(subject = factor(subject),
         occasion = factor(occasion)) %>%
  filter(subject == "10" | subject == "4" | subject == "7") %>%
  tbl_df()
```

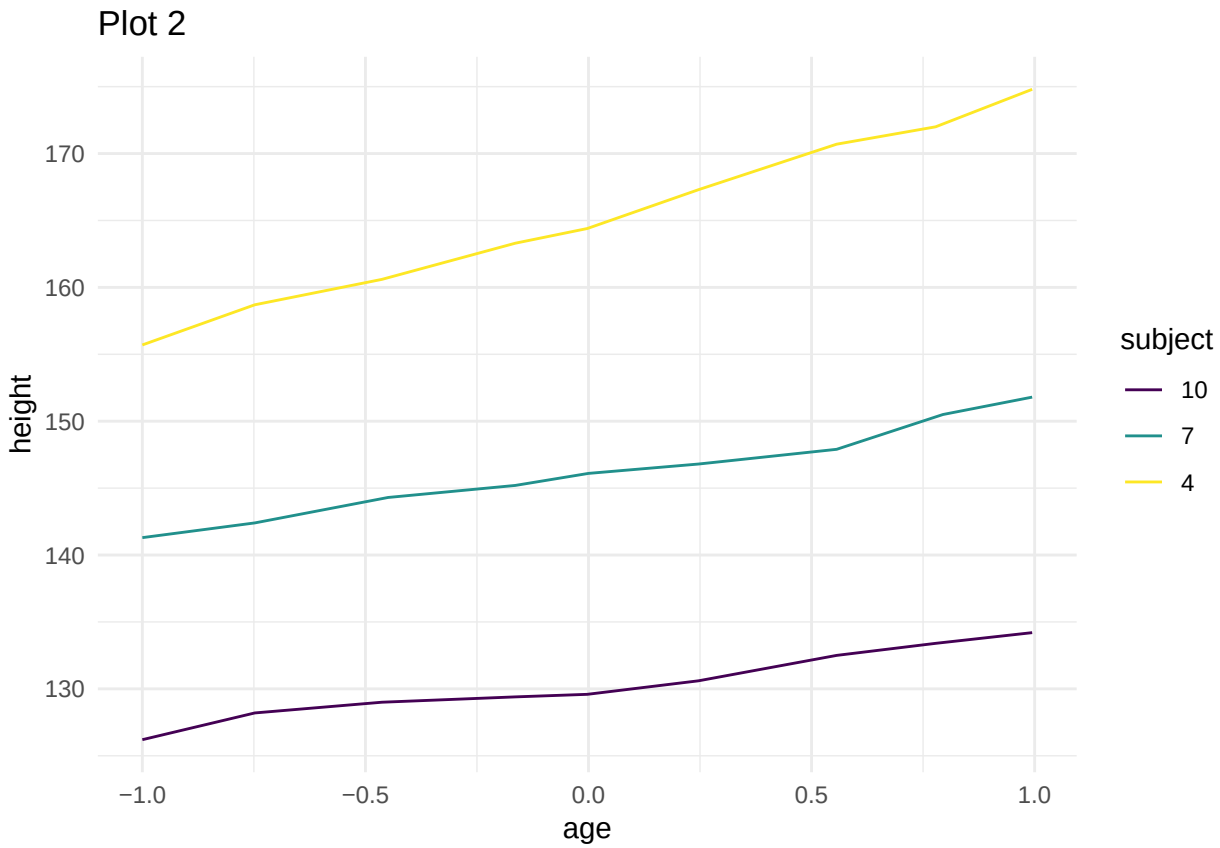
1. Reproduce the following plots, using the data. You can use whatever theme you want, but all else should be the same.

```
theme_set(theme_minimal())

ggplot(pd, aes(age, height)) +
  geom_line() +
  facet_wrap(~subject) +
  ggtitle("Plot 1")
```

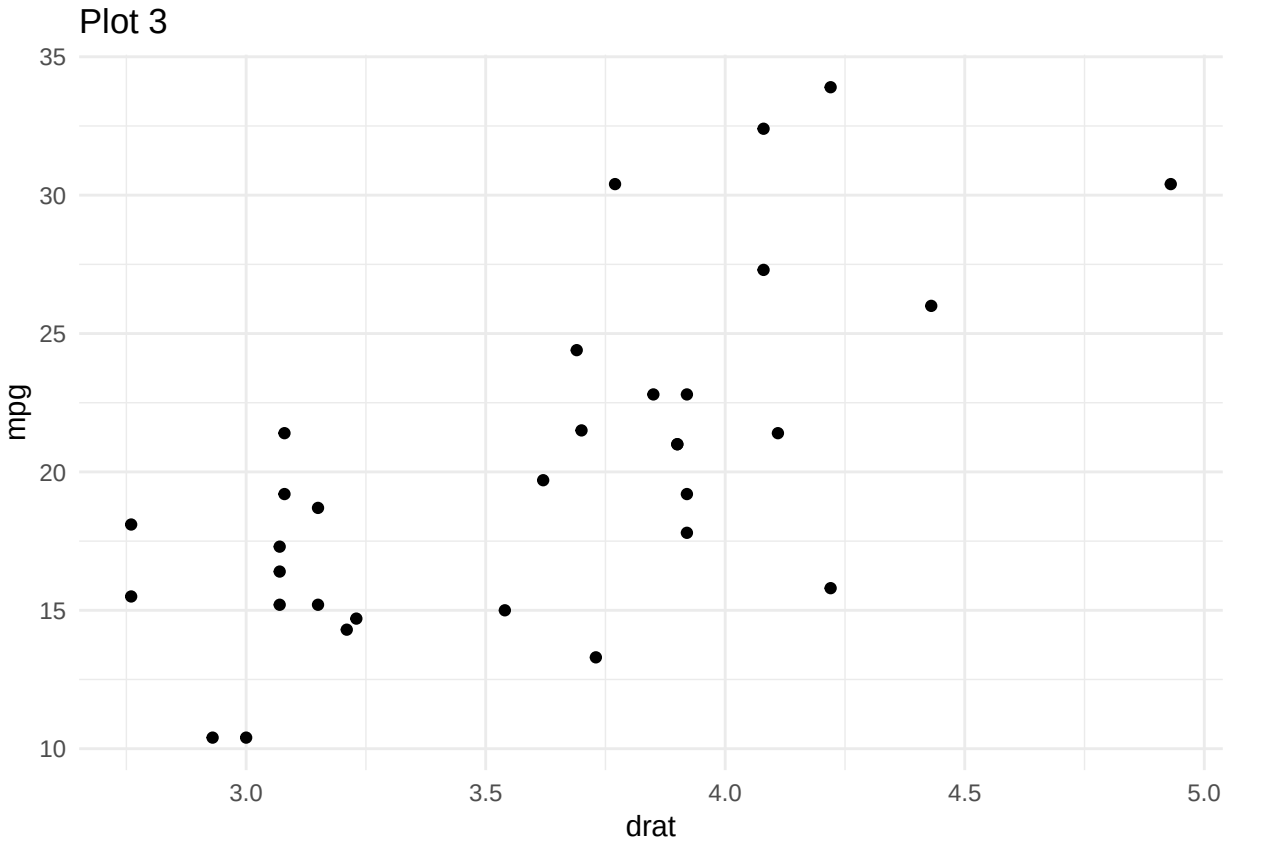



```
ggplot(pd, aes(age, height, color = subject)) +
  geom_line() +
  ggtitle("Plot 2")
```

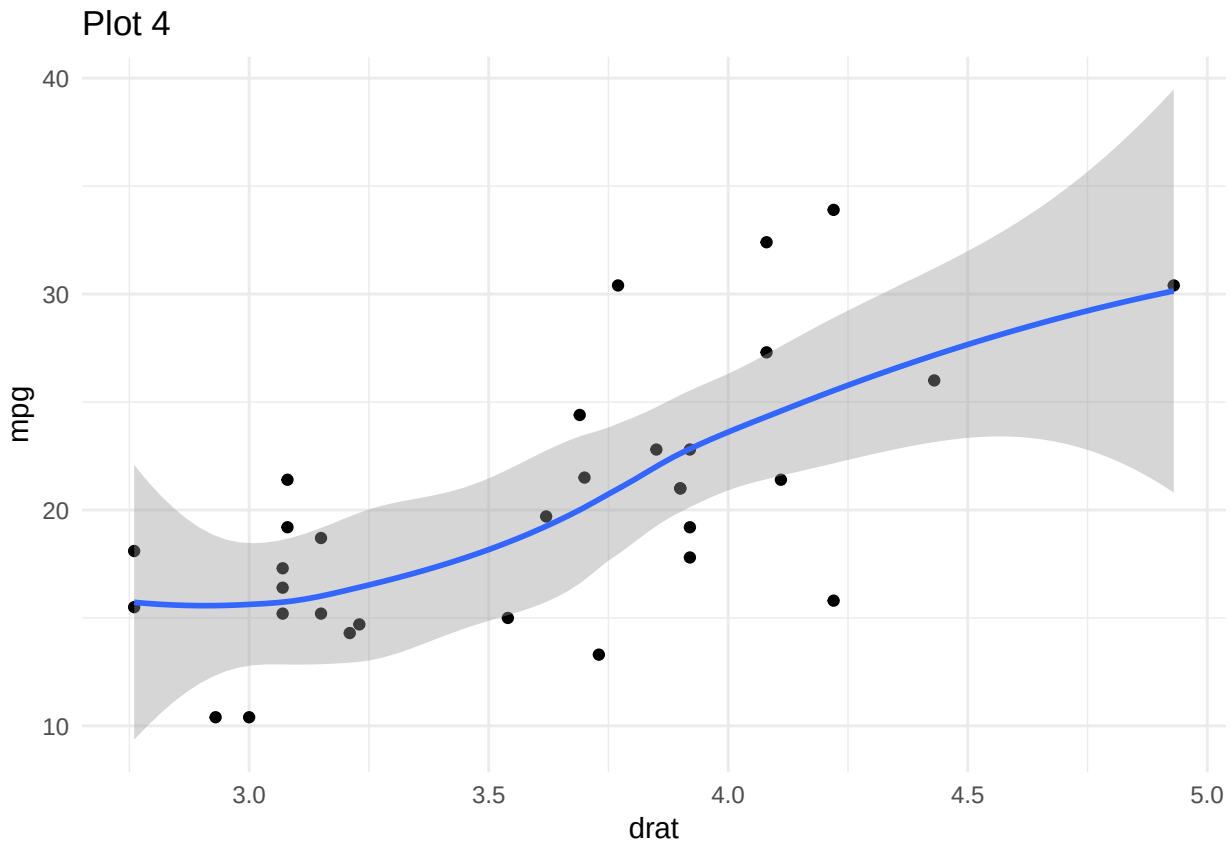

Plot 2
height
170
160
150
140
130
−1.0
−0.5
0.0
0.5
1.0
age
subject
10
7
4

2. Use the *mtcars* dataset from base R to replicate the following plots. (just type *mtcars* into the console to see the dataset).

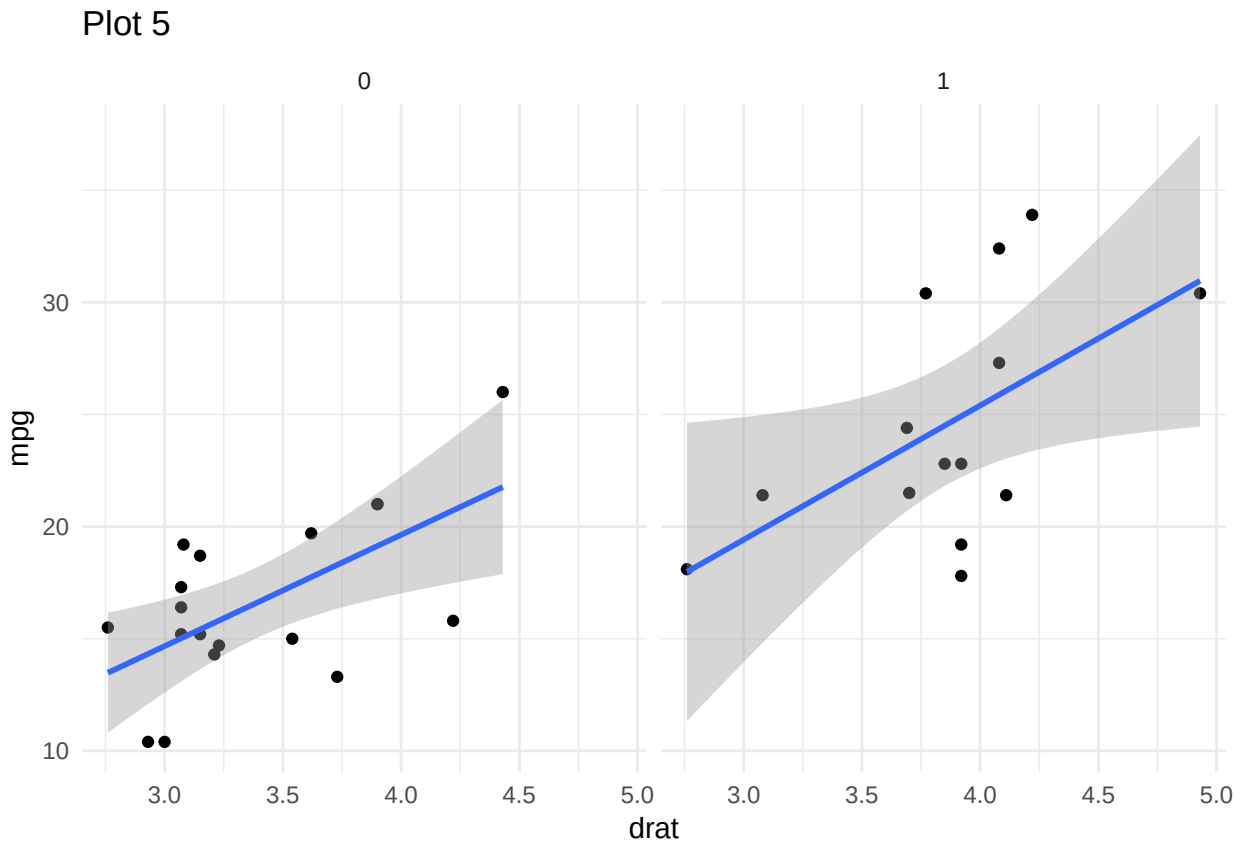
```
ggplot(mtcars, aes(drat, mpg)) +
  geom_point() +
  ggtitle("Plot 3")
```



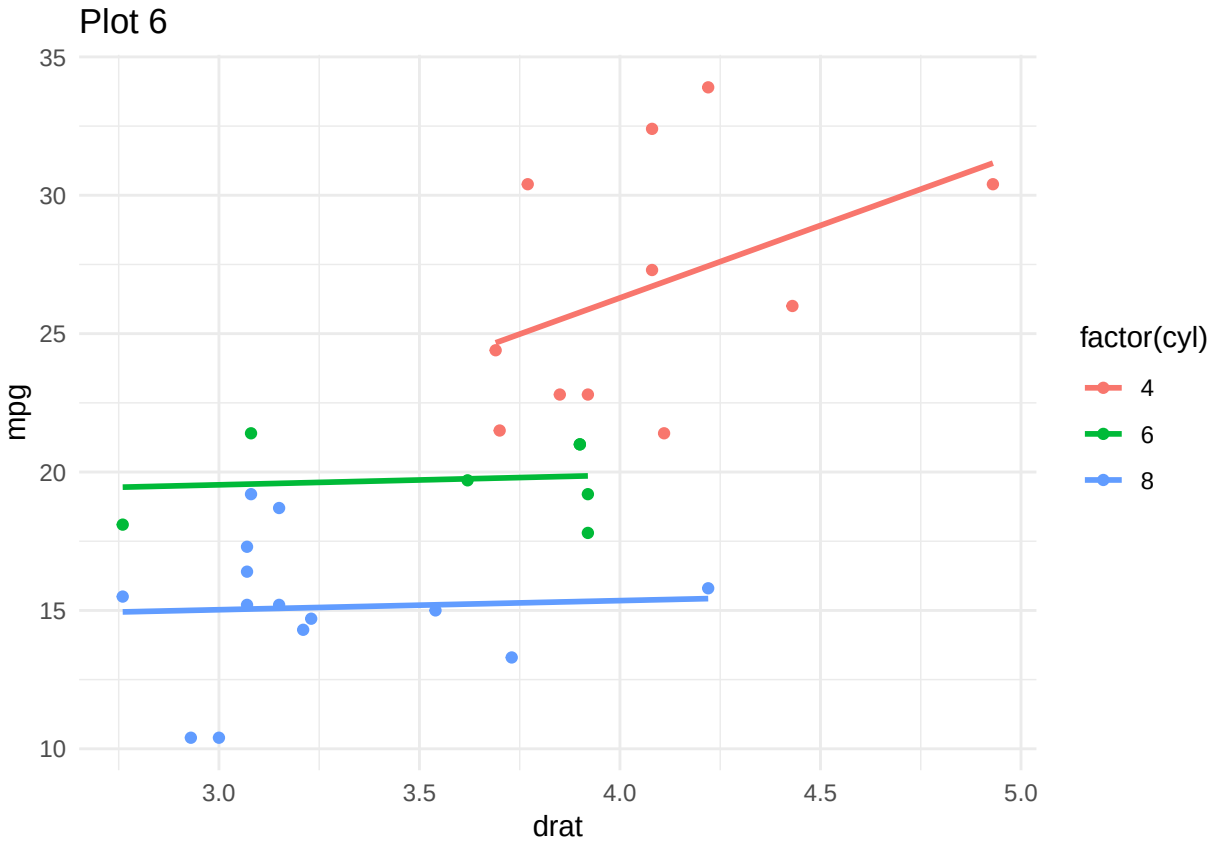

```
ggplot(mtcars, aes(drat, mpg)) +
  geom_point() +
  geom_smooth() +
  ggtitle("Plot 4")
```




```
ggplot(mtcars, aes(drat, mpg)) +
  geom_point() +
  geom_smooth(method = "lm") +
  facet_wrap(~vs) +
  ggtitle("Plot 5")
```

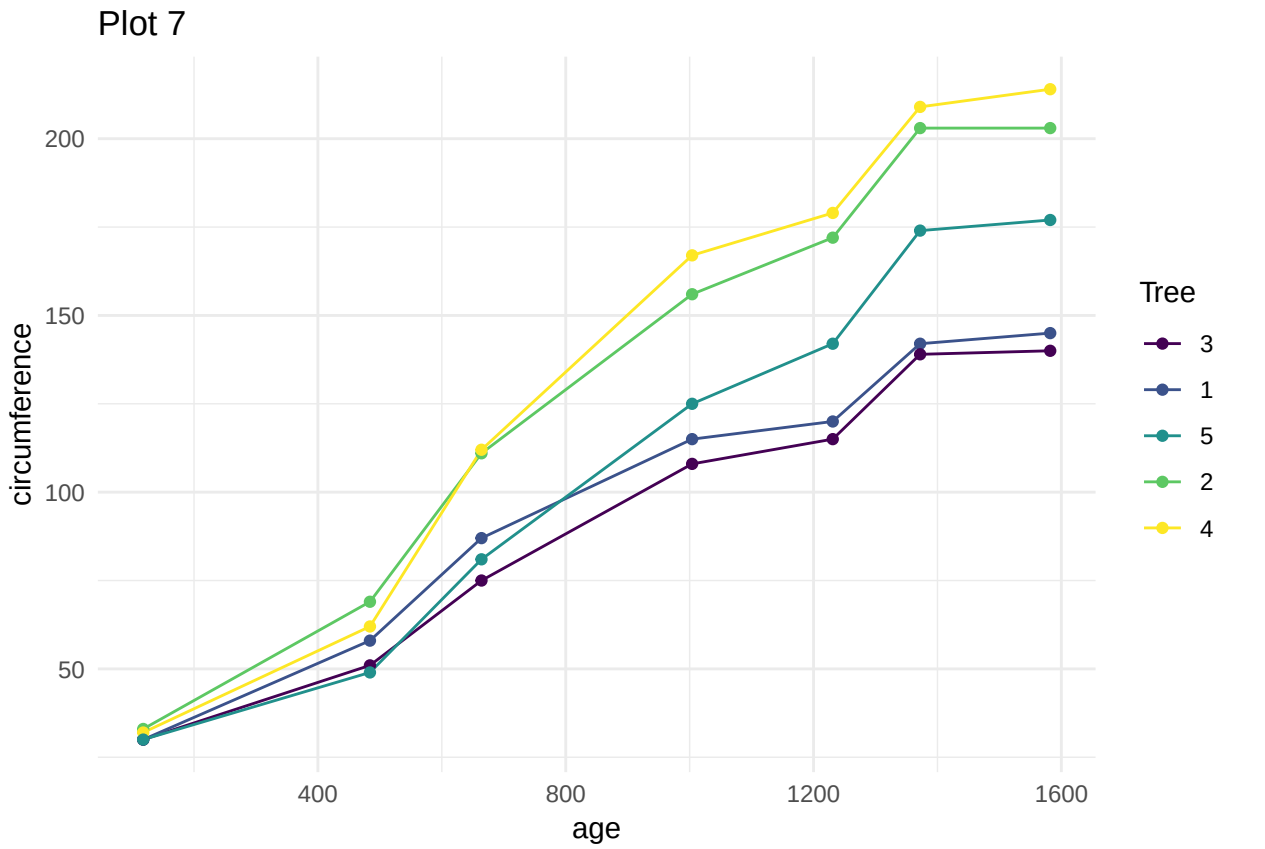



```
ggplot(mtcars, aes(drat, mpg, color = factor(cyl))) +
  geom_point() +
  geom_smooth(method = "lm", se = FALSE) +
  ggtitle("Plot 6")
```


Plot 6
35
30
25
20
15
10
mpg
3.0
3.5
4.0
4.5
5.0
drat
factor(cyl)
4
6
8

3. Use the *Orange* dataset, also part of base R, to replicate the following plots.

```
ggplot(Orange, aes(age, circumference, color = Tree)) +
  geom_line() +
  geom_point() +
  ggtitle("Plot 7")
```




```
ggplot(Orange, aes(age, circumference)) +
  geom_smooth(method = "lm", se = FALSE, color = "gray40") +
  geom_point(aes(color = Tree), size = 3) +
  labs(x = "Age of the Tree (in days)",
       y = "Circumference of the Trunk (in mm)",
       title = "Orange Tree Growth",
       subtitle = "Gray line displays a linear model fit to the data.")
```


Orange Tree Growth
Gray line displays a linear model fit to the data.
Circumference of the Trunk (in mm)
200
150
100
50
400
800
1200
1600
Age of the Tree (in days)
Tree
3
1
5
2
4