Q2.R

mirrien

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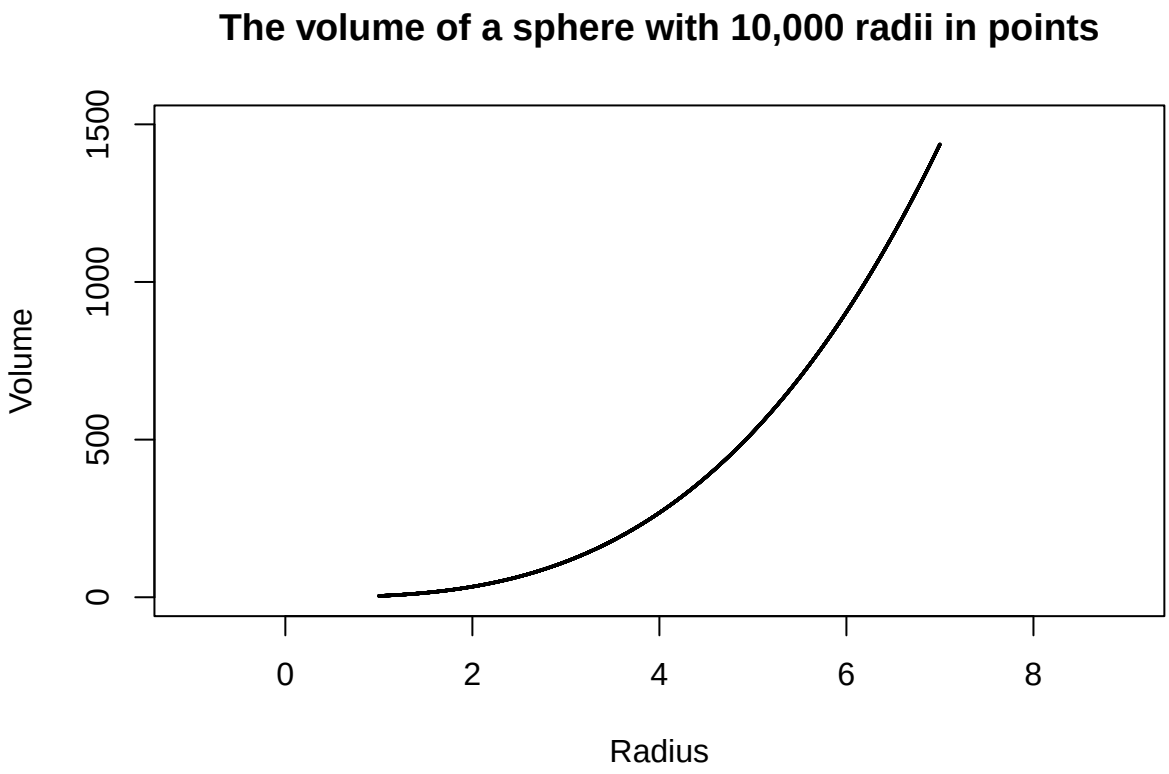
```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.4     v dplyr   1.0.7
## v tidyr   1.1.3     v stringr 1.4.0
## v readr   2.0.1     v forcats 0.5.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

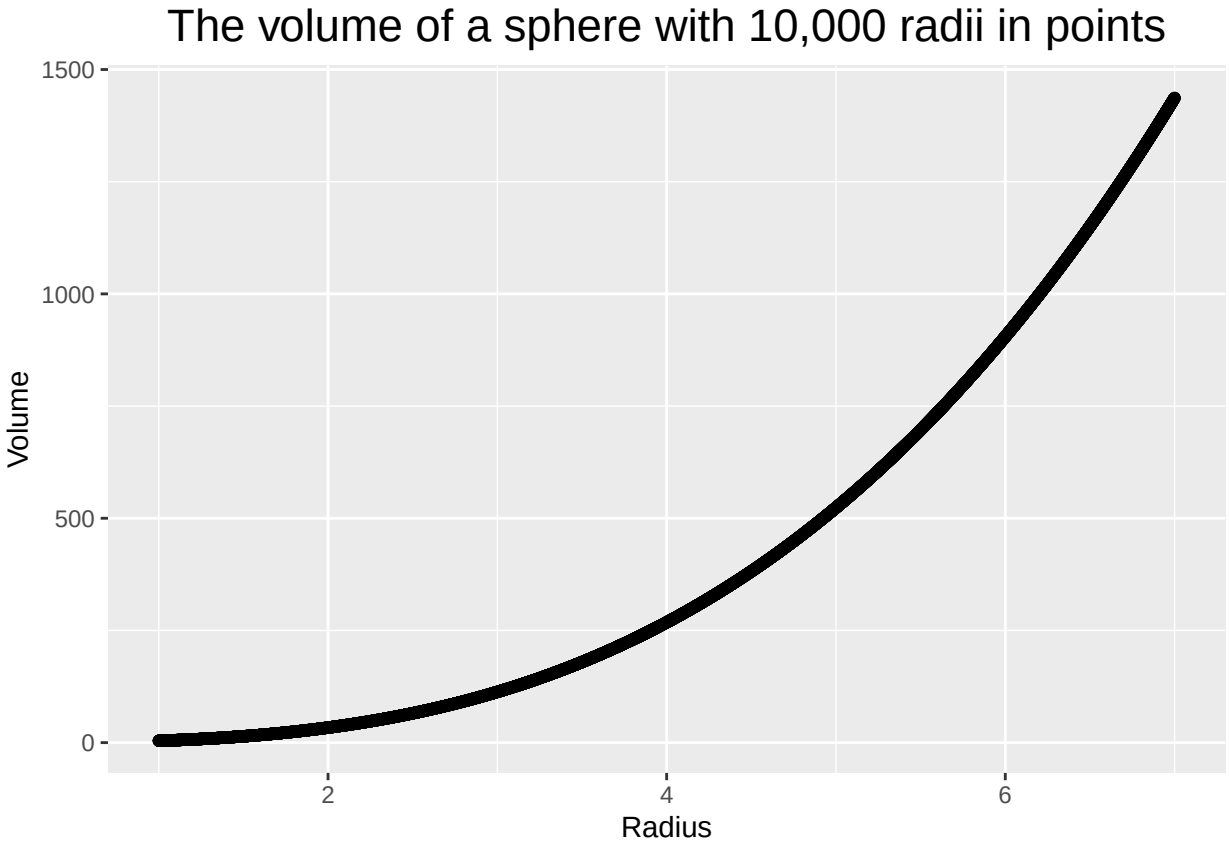
```
# Define parameters
radius = seq(from = 1,to = 7,length = 10000)
volume = 4/3*pi*radius^3



# Q2a
par(mfrow=c(1,1))
plot(radius,volume,main="The volume of a sphere with 10,000 radii in points",
     xlab="Radius",
     ylab="Volume",
     ylim=c(0,1500),xlim=c(-1,9),
     lwd = 1,
     col = "black",
     type = "p",
     cex = 0.1)
```




```
# Q2c
df <- data.frame(Radius=radius, Volume=volume)
head(df)
```

```
##   Radius   Volume
## 1 1.0000 4.188790
## 2 1.0006 4.196335
## 3 1.0012 4.203889
## 4 1.0018 4.211453
## 5 1.0024 4.219025
## 6 1.0030 4.226606
```

```
ggplot(df,aes(x=Radius,y=Volume)) + geom_point() +
  labs(title = "The volume of a sphere with 10,000 radii in points") +
  theme(plot.title = element_text(size = rel(1.5), hjust = 0.5))
```


The volume of a sphere with 10,000 radii in points
1500
1000
500
0
Volume
2
4
6
Radius