HW1

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```
library(ggplot2)
library(sp)
```

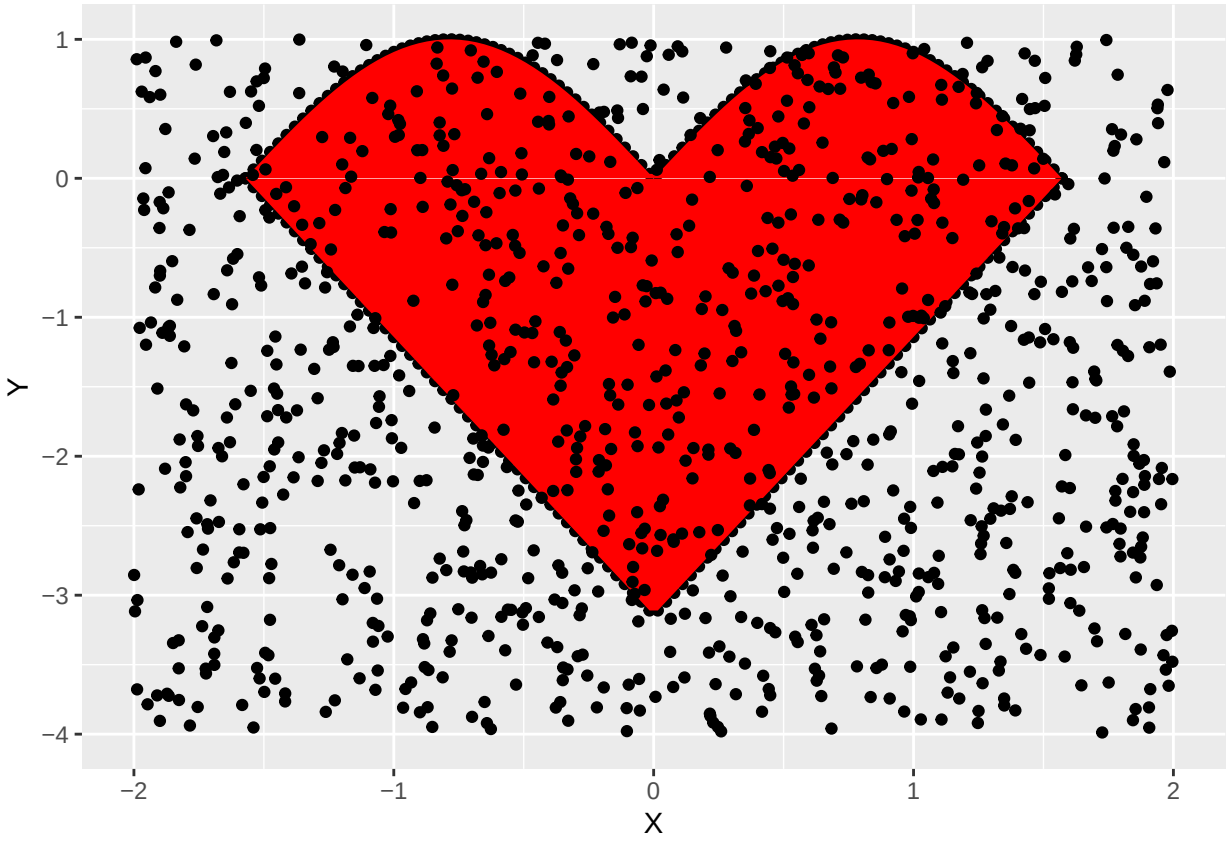
Task: find the area of a figure bounded by curves given by the equation:

$$y = 2|x| - \pi, x \in [-\frac{pi}{2}, \frac{pi}{2}]$$

$$y = |sin(2x)|, x \in [-\frac{pi}{2}, \frac{pi}{2}]$$

Generation of random points

```
coords <- function(){
  x <- runif(1000, min = -2, max = 2)
  y <- runif(1000, min = -4, max = 1)
  df2 <- data.frame(x, y)
  df2
}
points <- coords()
p + geom_point(points, mapping = aes(x,y))
```



Counting area

```
inside <- sum(point.in.polygon(points$x, points$y, X, Y))
inside
```

```
## [1] 346
```

```
area <- 20*(inside/(1000-inside))
area
```

```
## [1] 10.58104
```