hw1 igor glukhov

```
x_lower <- -pi * 0.5
x_upper <- pi * 0.5

y_min <- -pi
y_max <- 1

total_square <- (y_max - y_min) * (x_upper - x_lower)

N = 1000

rand_dots_x <- runif(N, x_lower, x_upper)
rand_dots_y <- runif(N, y_min, y_max)

grid <- expand.grid(x=rand_dots_x, y=rand_dots_y)


 upper_func <- function(x, y){
   return(y > 2 * abs(x) - pi)
 }

 lower_func <- function(x, y){
   return(y < abs(sin(2*x)))
 }

 total_func <- function(x, y){
   return(upper_func(x, y) & lower_func(x, y))
 }


grid$is_inside <- apply(grid[,c('x','y')], 1, function(dot) total_func(dot['x'],dot['y']))

cat("Square under the figure is:", mean(grid$is_inside) * total_square)
```

```
## Square under the figure is: 6.814901
```