HW1_Applied_Statistics

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Generate random dots

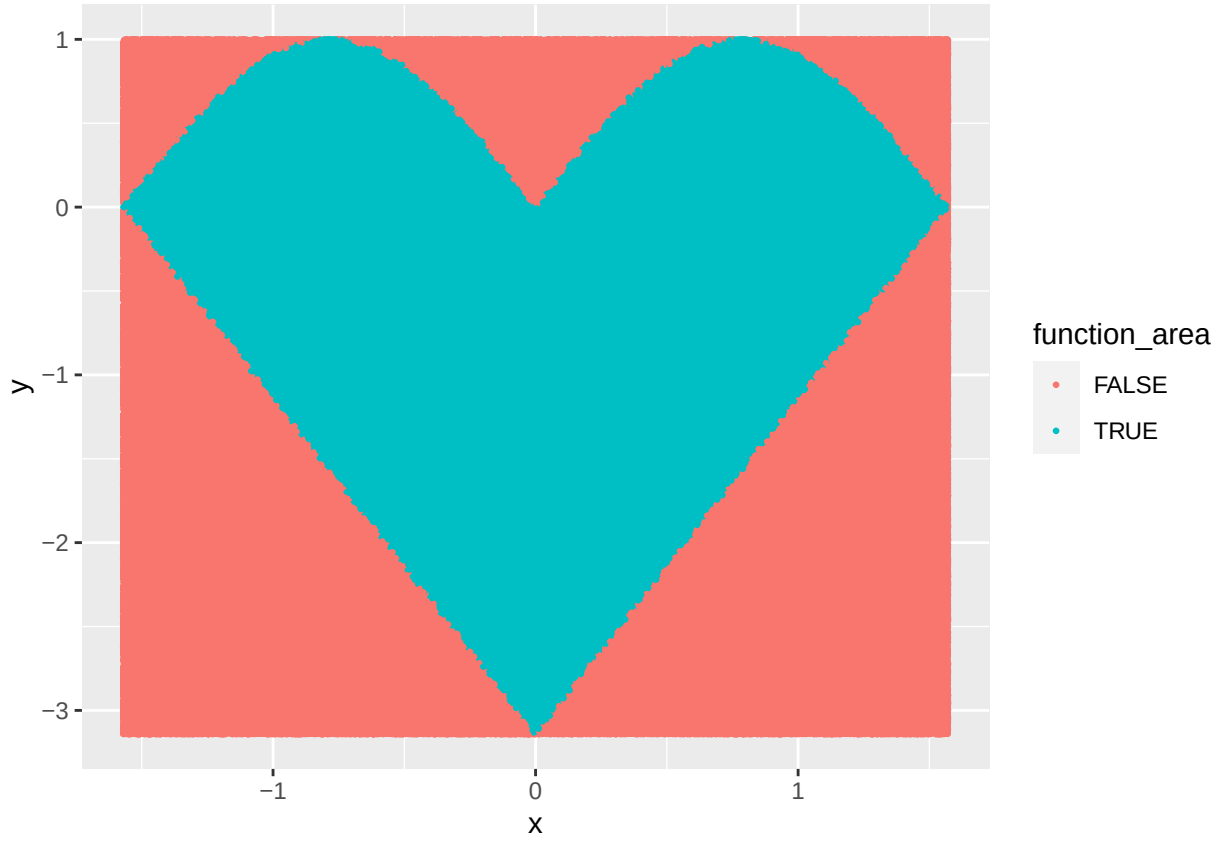
```
n <- 1e6
x <- runif(n, min =  -pi/2, max = pi/2)
y <- runif(n, min = -pi, max = 1)
```

Define the function:

```
function_area <- 2*abs(x) - pi - y <= 0 & abs(sin(2*x)) - y >= 0
```

Plot the generated dots. Let's find the blue area

```
points <- data.frame(x, y)
ggplot(points) +
    geom_point(aes(x = x, y = y, color = function_area), size = 0.5)
```



To calculate the required area - find the mean number of dots which are within figure and multiply by the are of rectangle (1 + pi) * (pi/2 + pi/2)

```
mean(function_area) * (1 + pi) * (pi/2 + pi/2)
```

```
## [1] 6.93865
```