

Estimating Pi with R

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Some basic R and tidyverse practice for a midterm: we use the good ol' “generate a bunch of points” strategy. `generate_points(n)` samples n random points in $[-1, 1] \times [-1, 1]$, and calculates the distances to origin. It also marks if the point falls in the unit circle.

```
generate_points <- function(n) {  
  points.x <- replicate(n, runif(1, min=-1, max=1))  
  points.y <- replicate(n, runif(1, min=-1, max=1))  
  
  points <- data.frame(points.x, points.y) %>%  
    mutate(dist = sqrt(points.x ** 2 + points.y ** 2)) %>%  
    mutate(in.circle = dist <= 1)  
  
  points  
}  
  
points <- generate_points(10000)
```

Estimated pi = 3.1256

