Untitled

Here ,I am doing monte carlo simulation by using loop

```
num_dart<-1000000
n_dart_circle<-0
for (i in 1:num_dart){
  x<-runif(1,-1,1)
  y<-runif(1,-1,1)
  if (x**2+y**2<=1){
    n_dart_circle=n_dart_circle+1
  }
}
print(paste('value of pi from monte carlo simuation',4*n_dart_circle/num_dart))
```

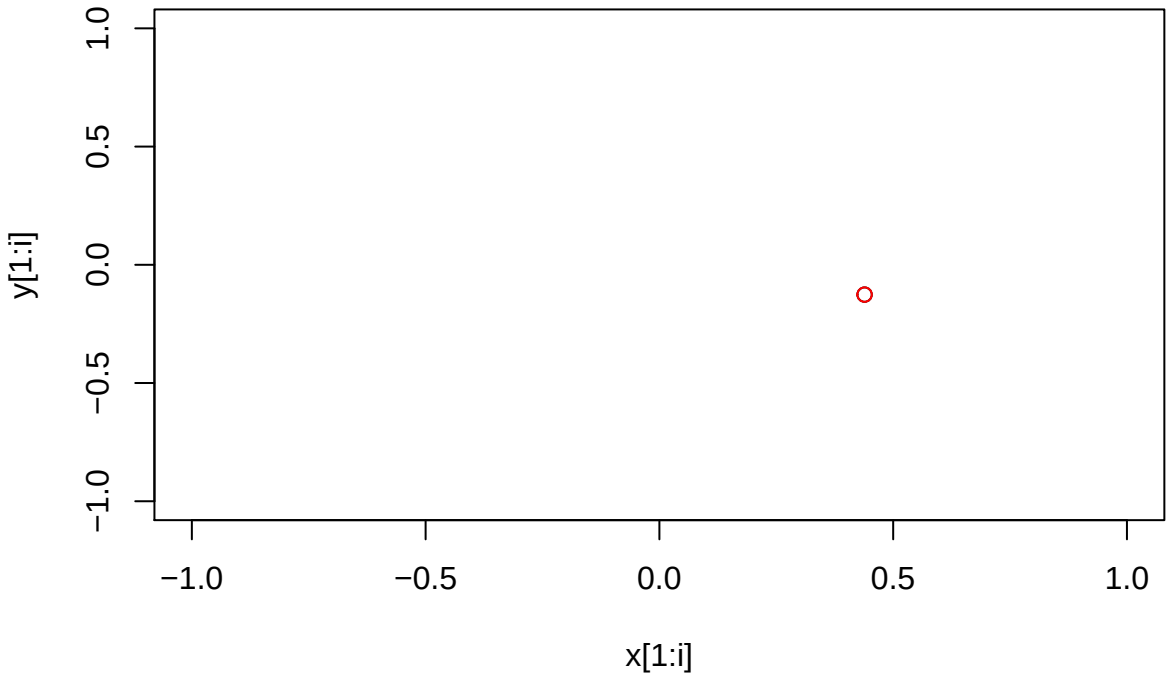
```
## [1] "value of pi from monte carlo simuation 3.141"
```

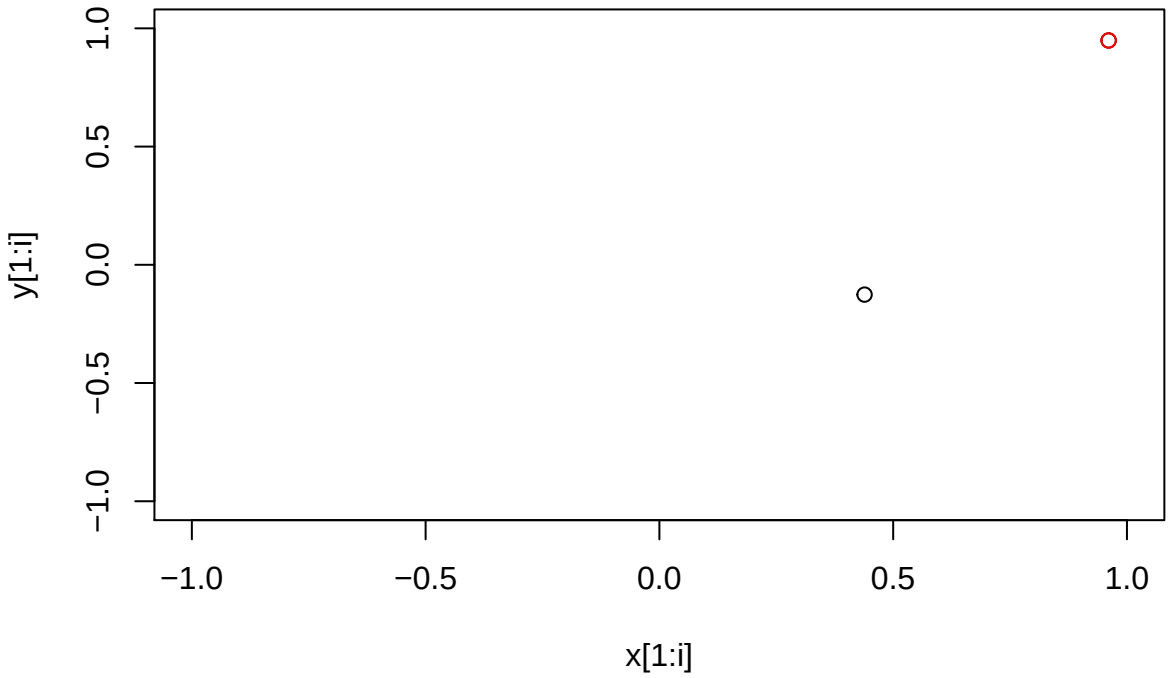
without using loop

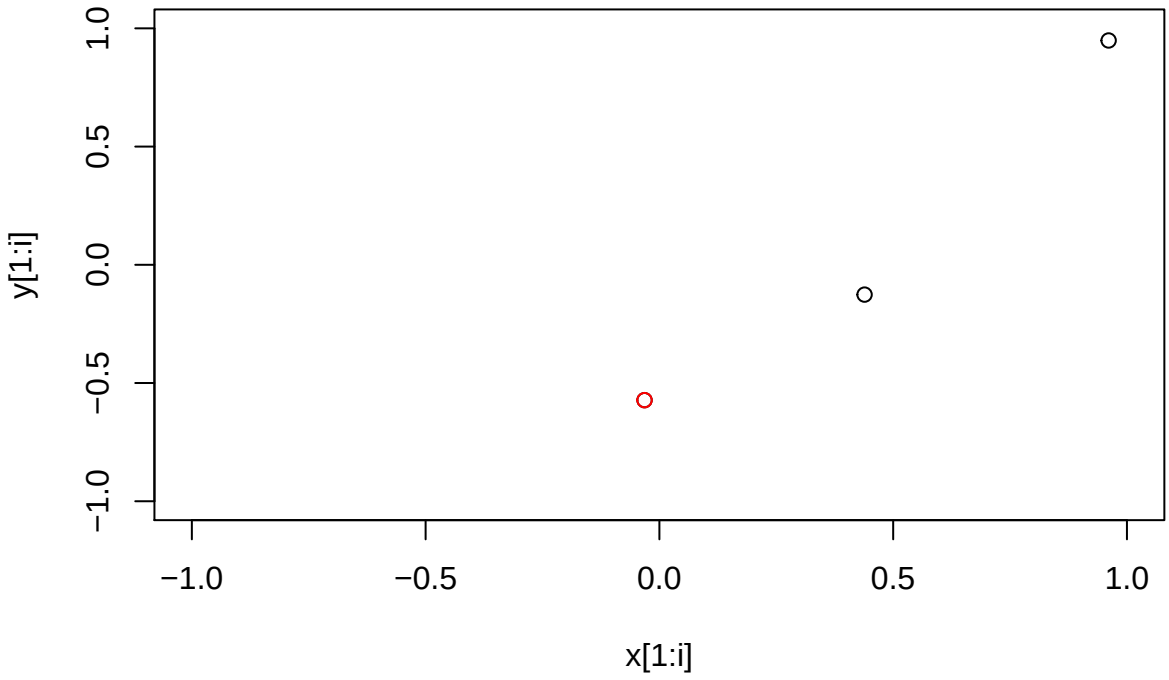
```
num_dart<-100000
n_dart_circle<-0
x<-runif(num_dart,-1,1)
y<-runif(num_dart,-1,1)
sum<-x**2+y**2
x1<-length(which(sum<=1))
print(paste('value of pi from monte carlo simuation without using loop',x1*4/num_dart))
```

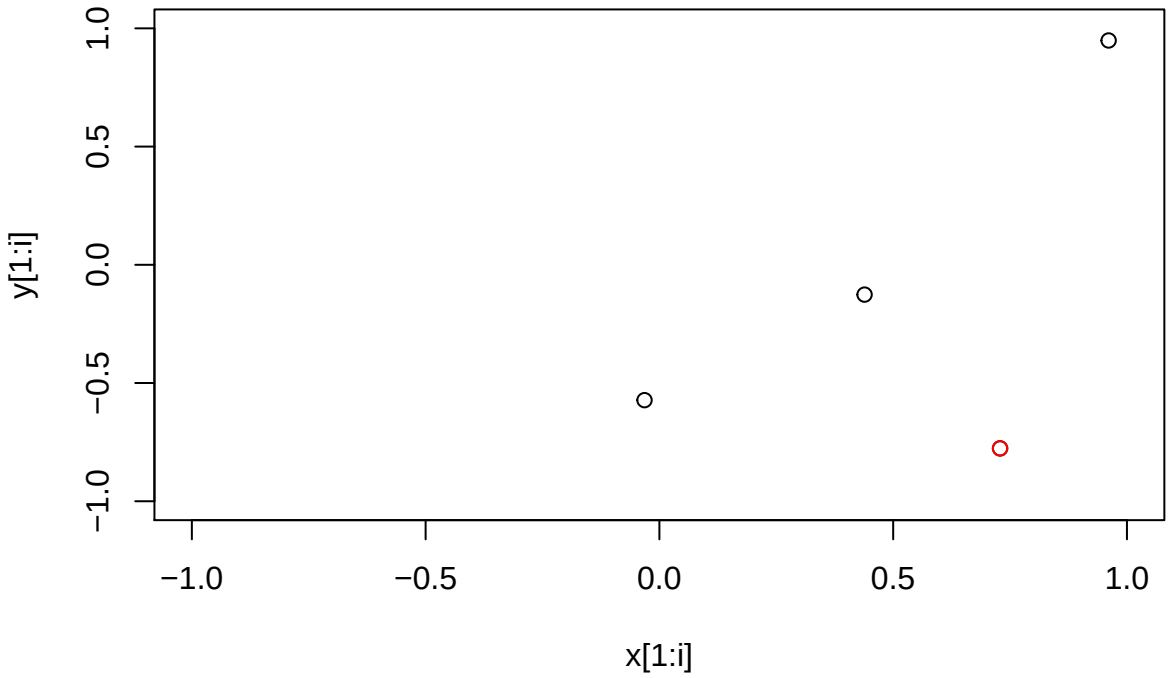
```
## [1] "value of pi from monte carlo simuation without using loop 3.14024"
```

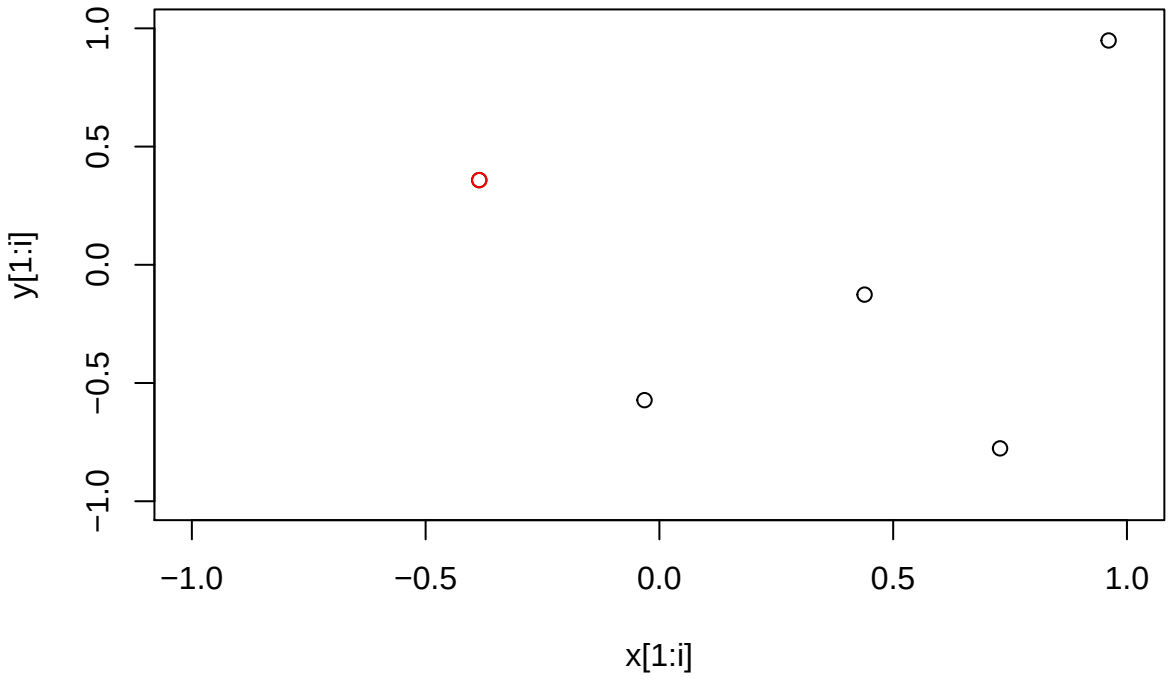
```
for (i in 1:10){
  plot(x[1:i],y[1:i],xlim=c(-1,1),ylim=c(-1,1))
  points(x[i],y[i],col='red')
  Sys.sleep(0.05)
}
```

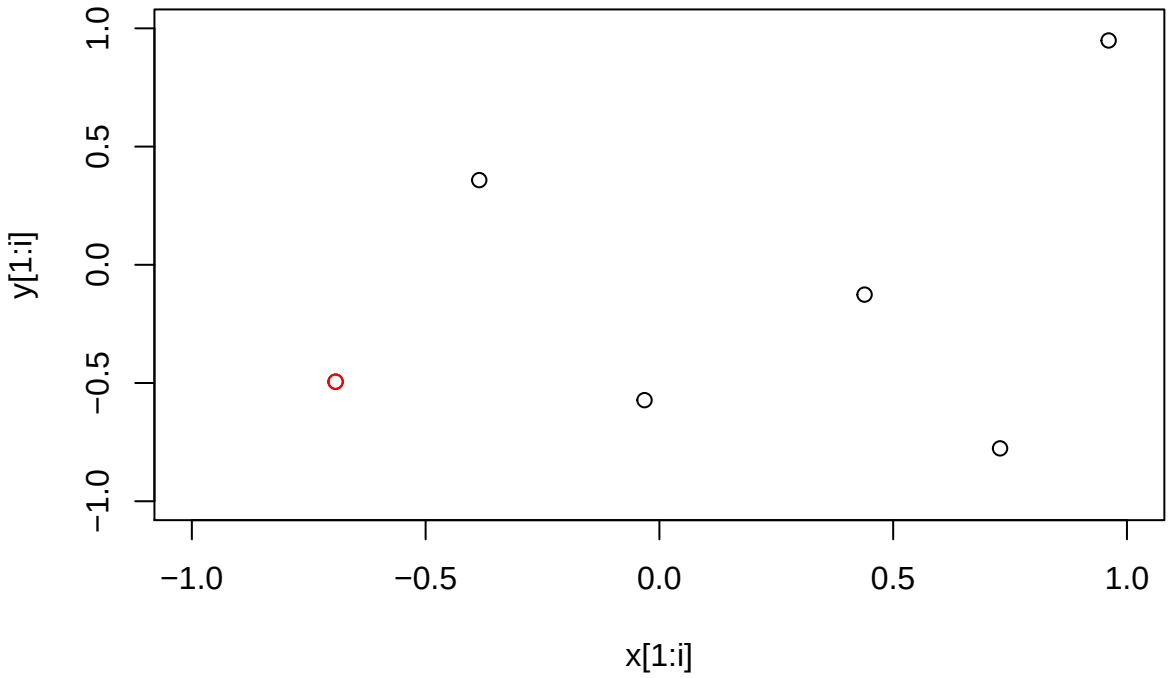

y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]

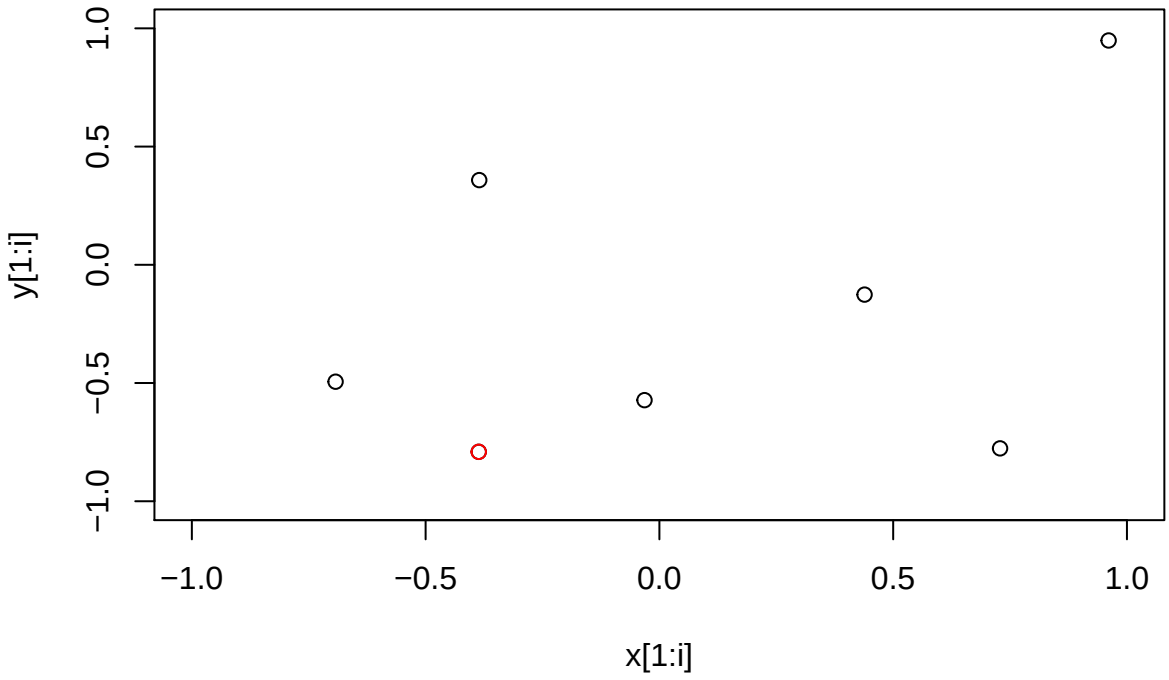

y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]

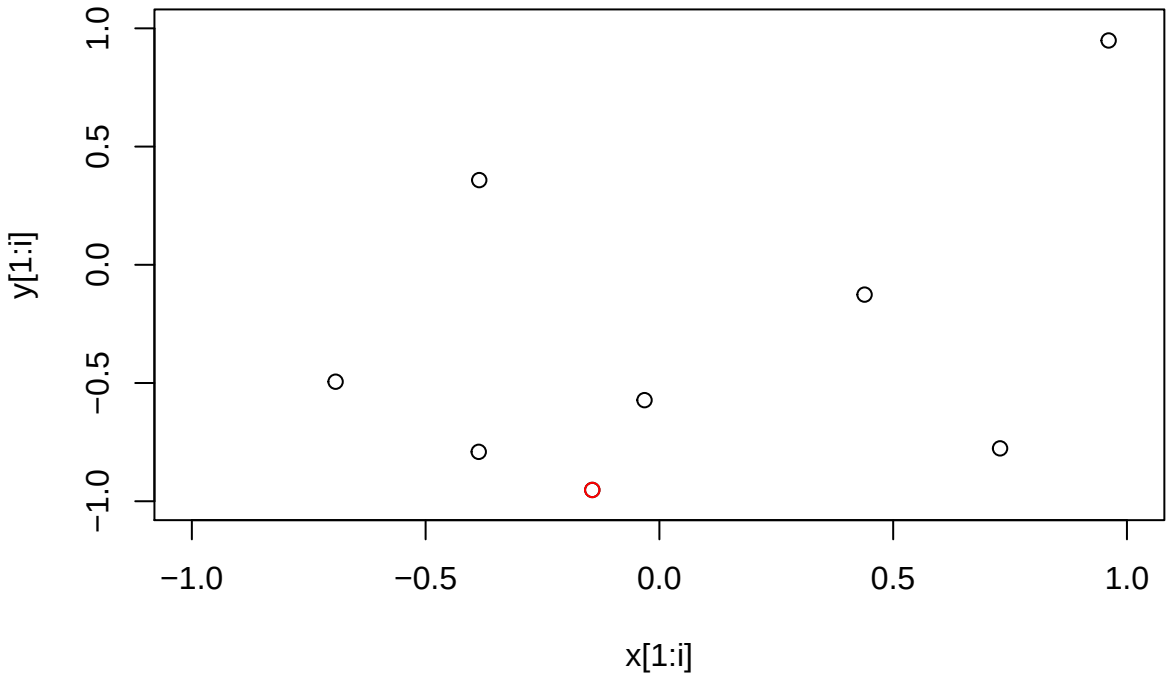

y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]

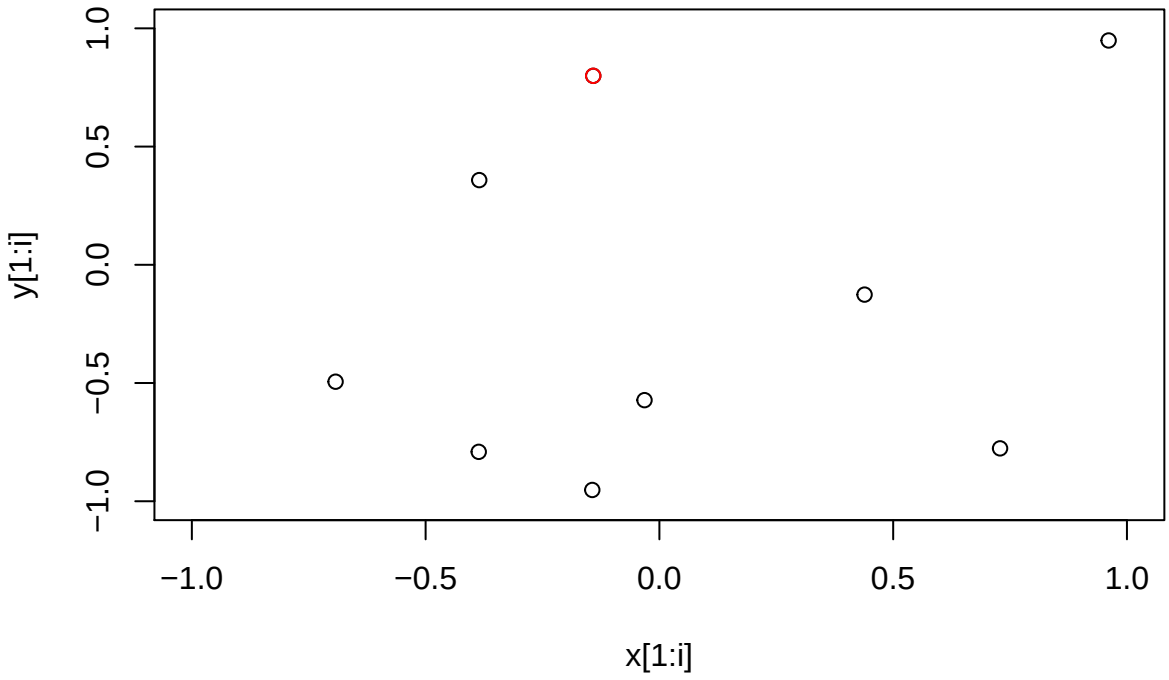

y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]

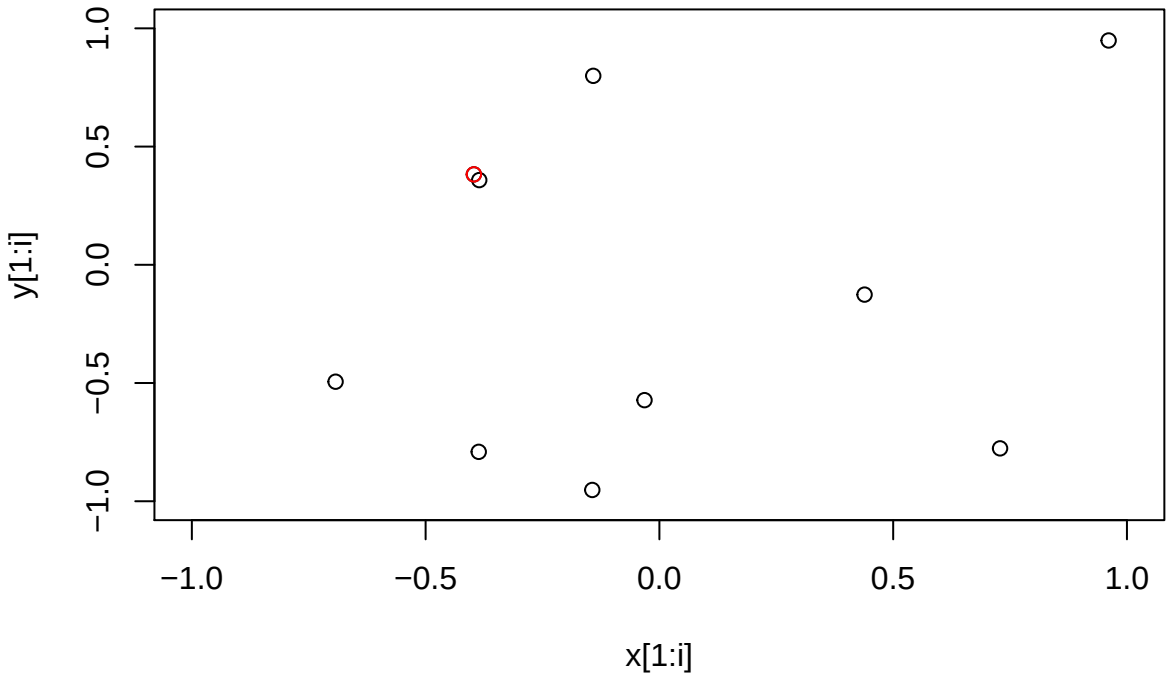

y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]


y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]


y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]


y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]


y[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
x[1:i]


y[1:i]
x[1:i]
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0