Problem_3

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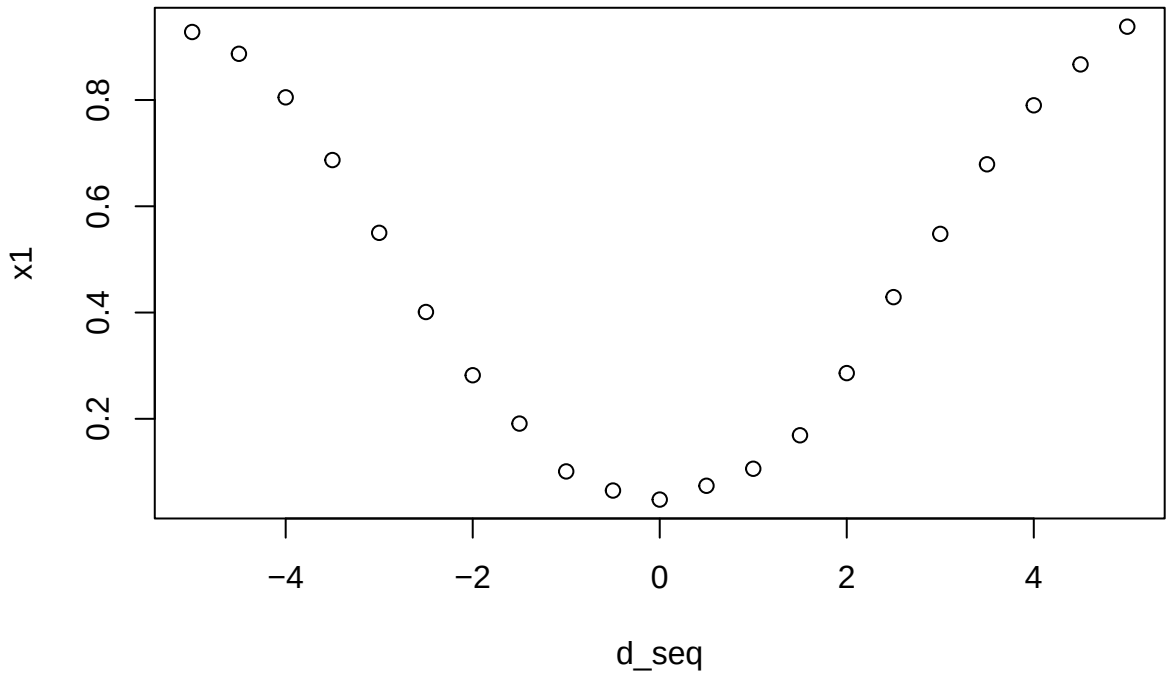
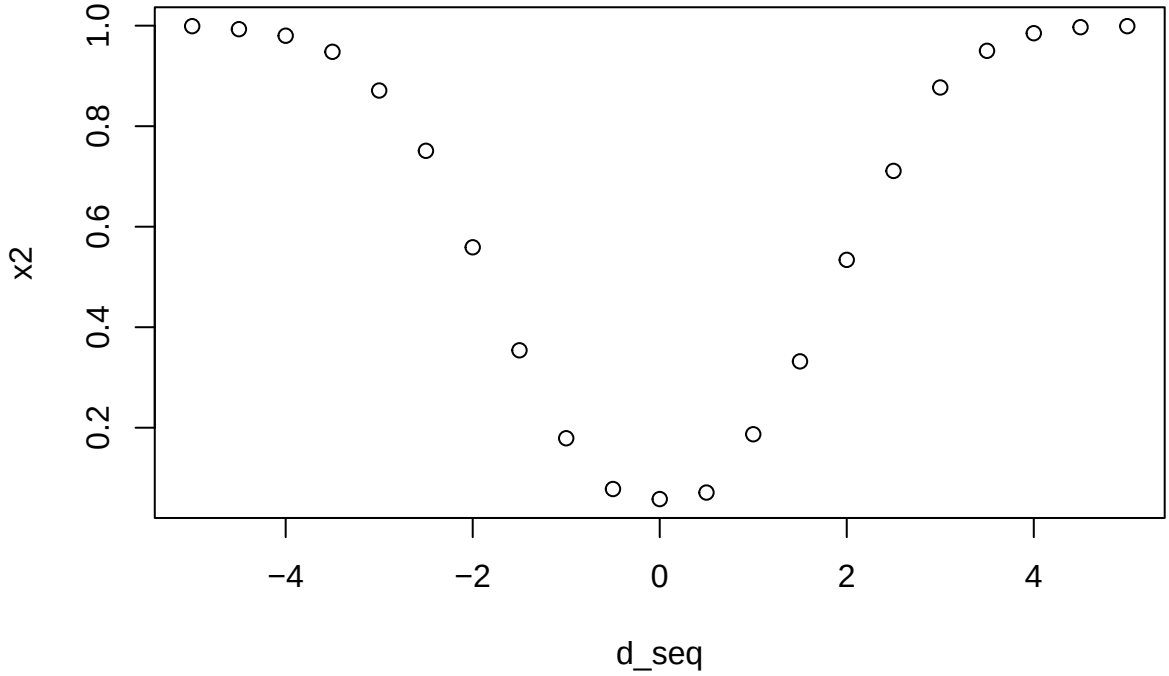
2022-06-17

Simulation of test-power

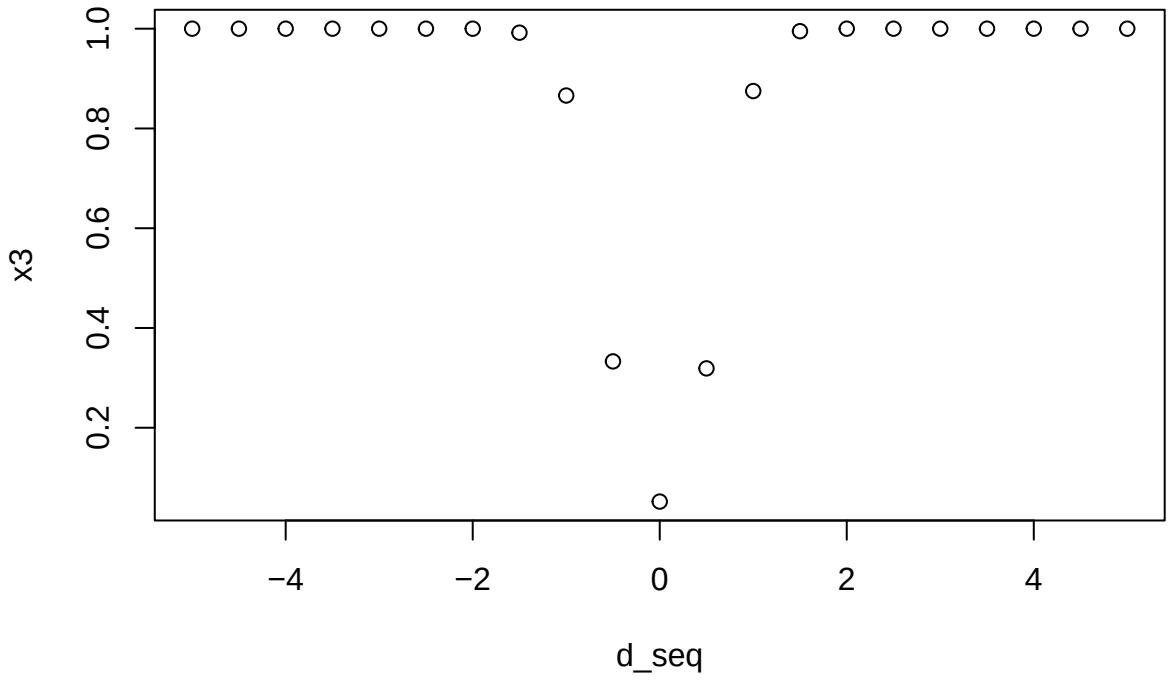
```
alpha <- 0.05
n_s <- 1000
d_seq <- seq(-5, 5, by=0.5)

foo <- function(n, std_dev) {
  sapply(d_seq, function(d) {
    rejected <- sapply(seq(n_s), function(s) {
      X <- rnorm(n, mean = 0, sd = std_dev)
      Y <- rnorm(n, mean = d, sd = std_dev)
      return(t.test(X, Y)$p.value < alpha)
    })
    return(sum(rejected)/n_s)
  })
}

x1 <- foo(10, 3)
x2 <- foo(20, 3)
x3 <- foo(20, 1)

plot(d_seq, x1)
```




```
plot(d_seq, x2)
```




```
plot(d_seq, x3)
```


x3
1.0
0.8
0.6
0.4
0.2
−4
−2
0
2
4
d_seq