Q5_Monte_Carlo_Simulation

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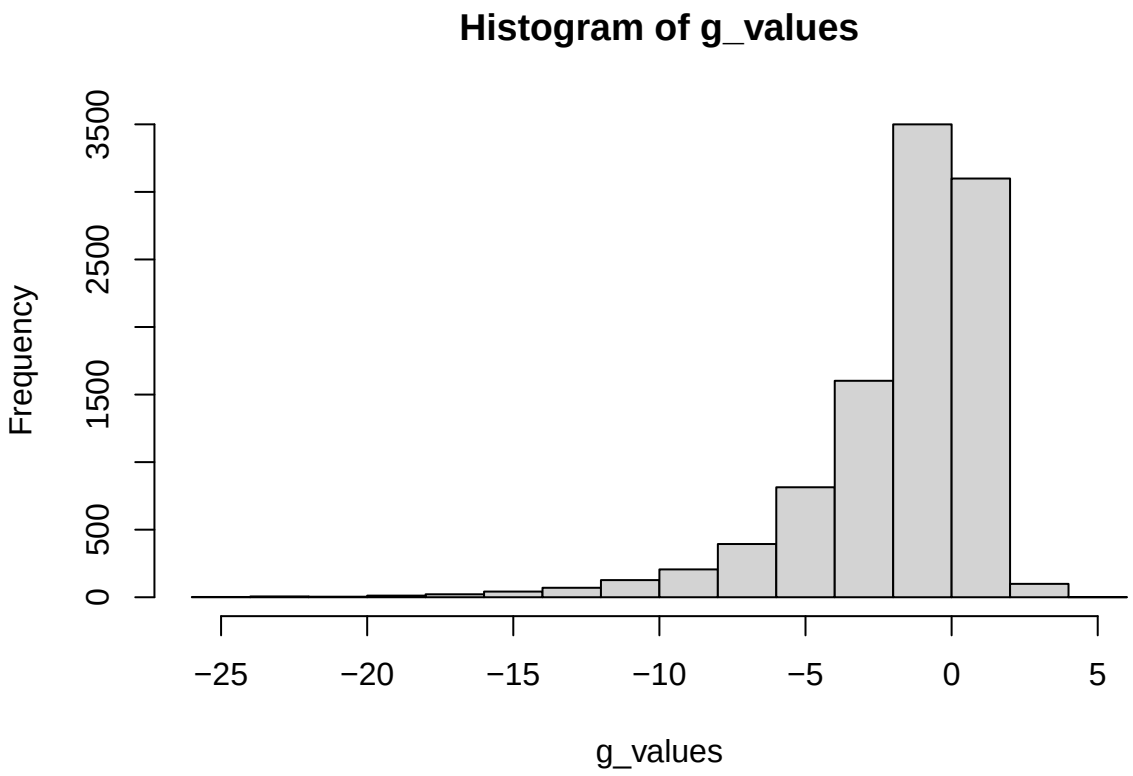
Monte Carlo Simulation for H and G

```
n_path = 10000
n = 10000
dt = 1 / n
epsilon = 0.0000000001


g_values = rep(n_path)
h_values = rep(n_path)
for (i in 1:n_path){
  W = 0
  total_sum = 0
  for (j in 1:n){
    W = W + rnorm(1) * sqrt(dt)
    total_sum = total_sum + (W^2) * dt
  }
  g_values[i] = 0.5 * (W^2 - 1) / (total_sum + epsilon)
  h_values[i] = 0.5 * (W^2 - 1) / sqrt(total_sum + epsilon)
}
```

G Function

```
hist(g_values)
```

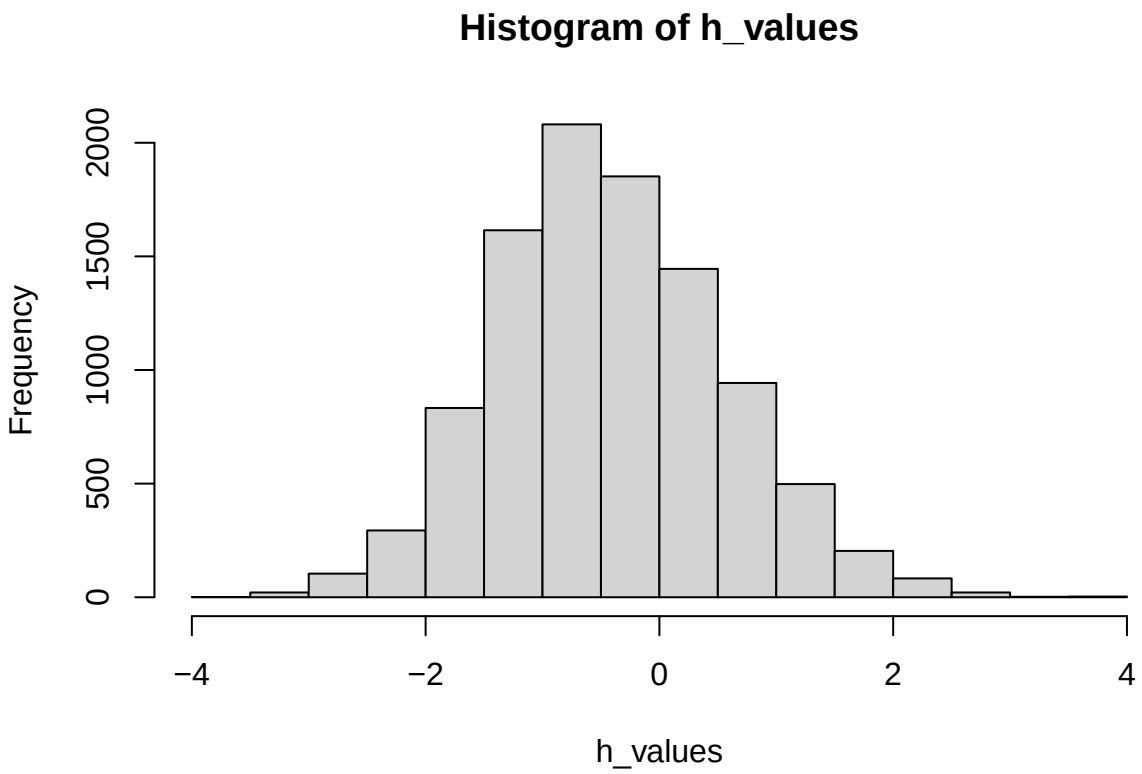



```
quantile(g_values,0.05)
```

```
##        5%
## -7.939717
```

H Function

```
hist(h_values)
```




```
quantile(h_values,0.05)
```

```
##         5%
## -1.927162
```