Contents

RNG using Accept/Reject (New)

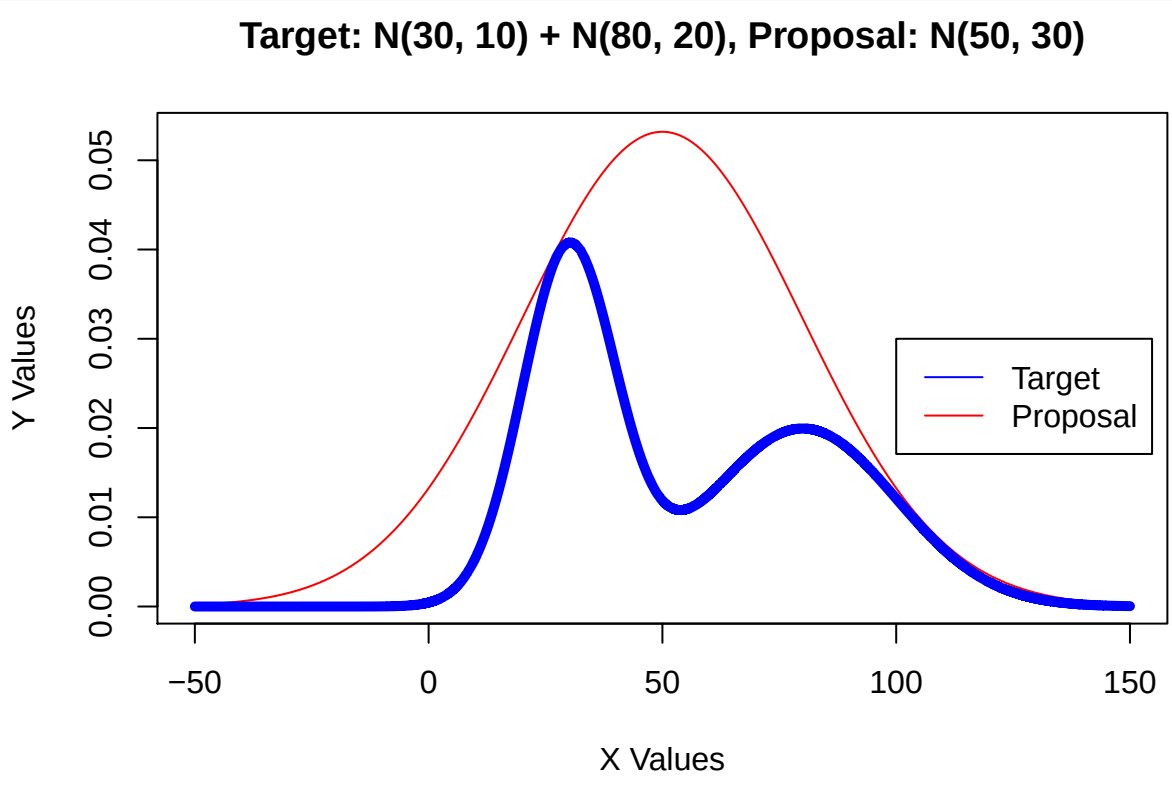
```
library(SimDesign)

# Sources Consulted: https://wiseodd.github.io/techblog/2015/10/21/rejection-sampling/

# Graph the Proposal and Target Densities
x = seq(-50, 150, .01)
targetY = dnorm(x, 30, 10) + dnorm(x, 80, 20)
proposalY = dnorm(x, 50, 30)

# M = 4
plot(x, 4*proposalY, col="red", type="l", main="Target: N(30, 10) + N(80, 20), Proposal: N(50, 30)", xla
lines(x, targetY, col="blue", lwd="5")

legend(100, .03, legend=c("Target", "Proposal"), col=c("blue", "red"), lty=1)
```




```
f = function(x) {
  dnorm(x, 30, 10) + dnorm(x, 80, 20)      # Mixed Normal Desnity (Target)
}

g = function(x) {
  dnorm(x, 50, 30)  # Normal Density (Proposal)
}
```

```r
randG = function(n) {
  rnorm(n, 50, 30)   # Random Generator of Proposal Density
}

# Run rejectionSampling method from SimDesign
# M = 4 works because the proposal density envelopes the target density as shown in the graph
s = rejectionSampling(100000, df = f, dg = g, rg = randG, M = 4)
hist(s, main="Accept/Reject Samples of N(30, 10) + N(80, 20)", xlab="X Values")
```