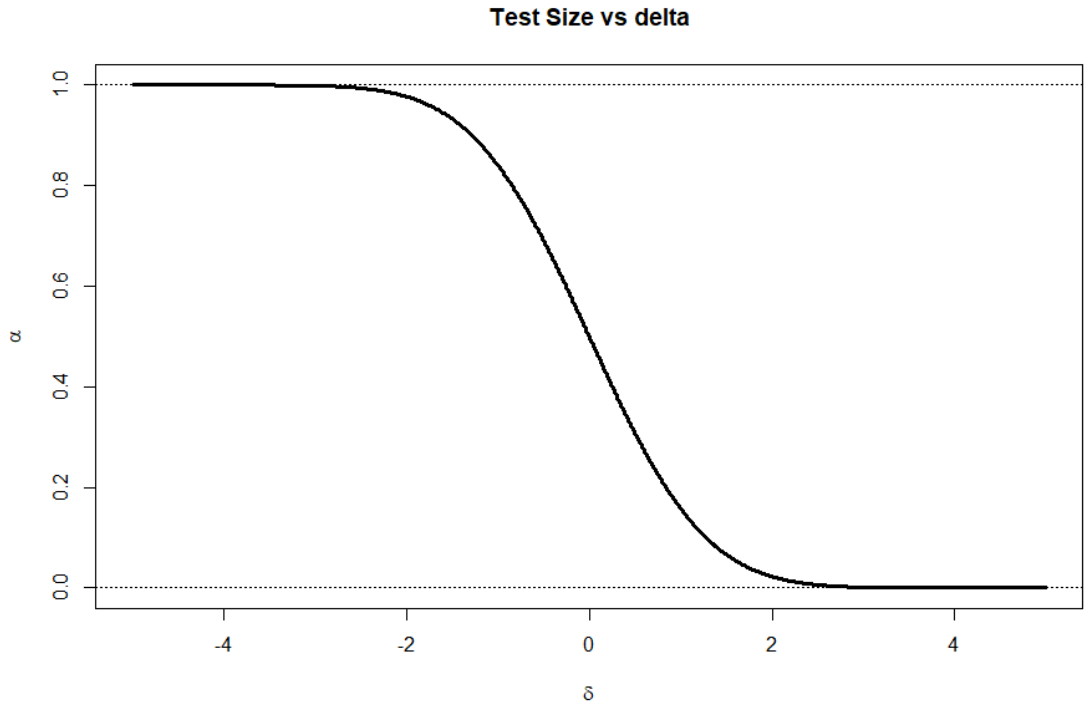
Q1-b

```
n <- 1
sigma <- 1
tau0 <- 1
delta <- seq(-5, 5, by=0.01)
alpha <- 1 - pnorm(sigma * delta / (sqrt(n) * tau0^2))

plot(x=delta, y=alpha, type='l', lwd=3, xlab=expression(delta), ylab=expression(alpha),
     main='Test Size vs delta')
abline(h=c(0, 1), lty=3)
```



From the plot of α versus $\delta = (\theta^\star - \theta_0)$, we perceive that the test size decreases as increment of *delta*. The test size or type one error converges to 0 when θ_0, the mean value of θ, is far less than value of $\theta^\star$. And the type one error converges to 1 when θ_0 is much bigger than $\theta^\star$.