**Exercise 1:**

We are observing the difference between the mother’s sleeping hours before and after having a baby

* n = 25
* Sample average = 2.5,
* Sample standard deviation = 4

Ho : µ ≤ 0

H1: µ > 0

**We calculate the P value:**

Significance level : 5%

P-value = P(T >= 3.125) = 1 - P(T < 3.125)

P-value = 1 - pt(3.125,24)

P-value = 0.002301319

**We calculate the testing statistic**

T =

T =

T =

T = 3,125

We can observe that the P-value is inferior the level of significance, rejecting the null hypothesis at a 5 % confidence level and accepting the alternative hypothesis that the mean difference between the mother’s sleeping hours before and after having a baby is superior than 0.

**Exercise 2:**

* Population mean without drug = 0.12
* Sample mean with drug = 0.047
* n = 526

We are testing to see if the population mean with the drug can be superior to the population mean twithought the drug at a 99.9 confidence level.

Population mean with the drug = µ Population mean without the drug = µO

Ho: µO ≥ µ

H1 = µO < µ

We calculate S with the proportion = = = 0.00923

**We calculate the testing statistic**

**We calculate the critical value:**

Significance level : %

P-value = P(T >= 3.125) = 1 - P(T < 3.125)

P-value = 1 - pt(3.125,24)

P-value = 0.002301319

T =

T = - 181,39