```r
# GUIA 22

#Construyendo una funcin en R para realizar la prueba de hipotesis.
Prueba.prop <- function(x, n, po, H1="Distinto", alfa=0.05)
{
  op <- options();
  options(digits=2)
  pe=x/n
  SE <- sqrt((po * (1-po))/n)
  Zo <- (pe-po)/SE

  if (H1 == "Menor" || H1 == "Mayor")
  {
    Z <- qnorm(alfa, mean=0, sd=1, lower.tail = FALSE, log.p = FALSE)

    valores <- rbind(Prop_Estimada=pe, Prop_Hipotetica=po, Z_critico=Z,Estadistico= Zo)
  }
  else
  {
    Z <- qnorm(alfa/2, mean=0, sd=1, lower.tail = FALSE, log.p = FALSE)

    valores <- rbind(Prop_Estimada=pe, Prop_Hipotetica =po, Z_critico_menor=-Z,
                     Z_critico_mayor =Z, Zo)
  }
  if (H1 == "Menor")
  {
    if (Zo < -Z) decision <- paste("Como Estadistico <", round(-Z,3),
                                   ", entonces rechazamos Ho")
    else decision <- paste("Como Estadistico>=", round(-Z,3),
                           ", entonces aceptamos Ho")
  }
  if (H1 == "Mayor")
  {
    if (Zo > Z) decision <- paste("Como Estadistico >", round(Z,3),
                                  ", entonces rechazamos Ho")
    else decision <- paste("Como Estadistico <=", round(Z,3),
                           ", entonces aceptamos Ho")
  }
  if (H1 == "Distinto")
  {
    if (Zo < -Z) decision <- paste("Como Estadistico <", round(-Z,3),
                                   ", entonces rechazamos Ho")
    if (Zo > Z) decision <- paste("Como Estadistico >", round(Z,3),
                                  ", entonces rechazamos Ho")
    else decision <- paste("Como Estadistico pertenece a [", round(-Z,3),
```

```
",", round(Z,3), "], entonces aceptamos Ho")
  }
  print(valores)
  print(decision)
  options(op)
}

Prueba.prop(23, 100, 0.15, H1="Menor", alfa=0.05)
```

```
##                  [,1]
## Prop_Estimada    0.23
## Prop_Hipotetica 0.15
## Z_critico        1.64
## Estadistico      2.24
## [1] "Como Estadistico>= -1.645 , entonces aceptamos Ho"
```

```
Prueba.prop(23, 100, 0.15, H1="Mayor", alfa=0.05)
```

```
##                  [,1]
## Prop_Estimada    0.23
## Prop_Hipotetica 0.15
## Z_critico        1.64
## Estadistico      2.24
## [1] "Como Estadistico > 1.645 , entonces rechazamos Ho"
```

```
Prueba.prop(23, 100, 0.15, H1="Distinto", alfa=0.05)
```

```
##                   [,1]
## Prop_Estimada     0.23
## Prop_Hipotetica   0.15
## Z_critico_menor -1.96
## Z_critico_mayor   1.96
## Zo                2.24
## [1] "Como Estadistico > 1.96 , entonces rechazamos Ho"
```

```
prop.test(x=23, n=100, p=0.15, alternative="less", conf.level=0.95)
```

```
##
##  1-sample proportions test with continuity correction
##
## data:  23 out of 100, null probability 0.15
## X-squared = 4.4118, df = 1, p-value = 0.9822
## alternative hypothesis: true p is less than 0.15
## 95 percent confidence interval:
##  0.0000000 0.3111509
## sample estimates:
##    p
## 0.23
```

```r
prop.test(x=23, n=100, p=0.15, alternative="greater", conf.level=0.95)
```

```
##
##  1-sample proportions test with continuity correction
##
## data:  23 out of 100, null probability 0.15
## X-squared = 4.4118, df = 1, p-value = 0.01785
## alternative hypothesis: true p is greater than 0.15
## 95 percent confidence interval:
##  0.1640827 1.0000000
## sample estimates:
##    p
## 0.23
```

```r
prop.test(x=23, n=100, p=0.15, alternative="two.sided", conf.level=0.95)
```

```
##
##  1-sample proportions test with continuity correction
##
## data:  23 out of 100, null probability 0.15
## X-squared = 4.4118, df = 1, p-value = 0.03569
## alternative hypothesis: true p is not equal to 0.15
## 95 percent confidence interval:
##  0.154215 0.326941
## sample estimates:
##    p
## 0.23
```

```r
#PRUEBA DE HIPOTESIS SOBRE UNA MEDIA, VARIANZA CONOCIDA.
X <- c(9.0, 3.41, 6.13, 1.99, 6.92, 3.12, 7.86, 2.01, 5.98,
       4.15, 6.87, 1.97, 4.01, 3.56, 8.04, 3.24, 5.05, 7.37)
Prueba.param <- function(x, des, VEC, H1="Distinto", alfa=0.05)
{
  op <- options();
  options(digits=2)
  miu<- mean(VEC)
  RC<- 1.645
  L<- length(VEC)
  Zo<-(miu-x)/(((des^2)/L)^(0.5))
  Z<- 1.645

  if (H1 == "Menor")
  {
    if (Zo < -Z) decision <- paste("Como Estadistico <", round(-Z,3),
                                   ", entonces rechazamos Ho")
```

```
    else decision <- paste("Como Estadistico>=", round(-Z,3),
                           ", entonces aceptamos Ho")
  }
  if (H1 == "Mayor")
  {
    if (Zo > Z) decision <- paste("Como Estadistico >", round(Z,3),
                                  ", entonces rechazamos Ho")
    else decision <- paste("Como Estadistico <=", round(Z,3),
                           ", entonces aceptamos Ho")
  }
  if (H1 == "Distinto")
  {
    if (Zo < -Z) decision <- paste("Como Estadistico <", round(-Z,3),
                                   ", entonces rechazamos Ho")
    if (Zo > Z) decision <- paste("Como Estadistico >", round(Z,3),
                                  ", entonces rechazamos Ho")
    else decision <- paste("Como Estadistico pertenece a [", round(-Z,3),
","," round(Z,3), "], entonces aceptamos Ho")
  }

  print(decision)
  options(op)
  }

Prueba.param(4, 2.45, X, H1="Mayor", alfa=0.05)

## [1] "Como Estadistico > 1.645 , entonces rechazamos Ho"

t.test(X,mu=4,alternative="greater")

##
##  One Sample t-test
##
## data:  X
## t = 1.9291, df = 17, p-value = 0.03529
## alternative hypothesis: true mean is greater than 4
## 95 percent confidence interval:
##  4.101959      Inf
## sample estimates:
## mean of x
##  5.037778
```