```
> #This is my attempt to do the worksheet on hypothesis
> # testing for 1 population, sigma known
> #
> # One Population: sigma known
>
> # we need to put the functin hypoth_test_known() into our
> # environment
>
> source("../hypo_known.R")
>
> # Case 1;
> #  I will store the required values in variables just so that
> # it is clear which values go where in the function
>
> n_1 <- 51
> sigma <- 8.18
> H_0 <- 76.70
> H_type <- -1    # -1 for <, 0 or !=, 1 for >
> alpha <- 0.06
> #  since this is a one tailed test leave alpha as is
> #      for our computation
> z <- qnorm( alpha, lower.tail=FALSE)
> z
[1] 1.554774
> xbar_1 <- 75.33
> #
> hypoth_test_known( H_0, sigma, H_type,
+                    alpha, n_1, xbar_1  )
              H0_mu                  H1:               sigma
            "76.7"        "mu <  76.7"              "8.18"
                 n           sig level           samp mean
              "51"              "0.06"             "75.33"
       sd samp mean             how far           test stat
 "1.14542910873491"  "1.78088293274365"  "-1.1960583064919"
       critical low       critical high            attained
 "74.9191170672564"              "n.a." "0.115836903237591"
           decision
    "do not reject"
> #
> #
> # Case 2
> n_1 <- 49
> sigma <- 17.91
> H_0 <- 171.02
> H_type <- 1    # -1 for <, 0 or !=, 1 for >
> alpha <- 0.035
> #  since this is a one tailed test leave alpha as is
> #      for our computation
> z <- qnorm( alpha, lower.tail=FALSE)
> z
[1] 1.811911
> xbar_1 <- 177.00
> #
> hypoth_test_known( H_0, sigma, H_type,
+                    alpha, n_1, xbar_1  )
                H0_mu                  H1:               sigma
              "171.02"        "mu >  171.02"             "17.91"
                   n           sig level           samp mean
                "49"             "0.035"              "177"
         sd samp mean              how far           test stat
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```
   "2.55857142857143"    "4.63590287894015"    "2.33724176437744"
         critical low         critical high              attained
               "n.a."     "175.65590287894" "0.00971330834645764"
             decision
             "Reject"
> #
> #
> # Case 3
> n_1 <- 14
> sigma <- 9.02
> H_0 <- 13.27
> H_type <- -1    # -1 for <, 0 or !=, 1 for >
> alpha <- 0.015
> #  since this is a one tailed test leave alpha as is
> #      for our computation
> z <- qnorm( alpha, lower.tail=FALSE)
> z
[1] 2.17009
> xbar_1 <- 7.62
> #
> hypoth_test_known( H_0, sigma, H_type,
+                    alpha, n_1, xbar_1  )
               H0_mu                   H1:                 sigma
            "13.27"         "mu <  13.27"               "9.02"
                 n             sig level            samp mean
              "14"               "0.015"               "7.62"
         sd samp mean                how far           test stat
   "2.41069640205007"    "5.23142906536657"   "-2.34372109038501"
         critical low         critical high              attained
   "8.03857093463343"               "n.a." "0.00954622138295961"
             decision
             "Reject"
> #
> #
> # Case 4
> n_1 <- 27
> sigma <- 7.84
> H_0 <- -23.95
> H_type <-  0   # -1 for <, 0 or !=, 1 for >
> alpha <- 0.060
> #  since this is a two tailed test use half alpha
> #      for our computation
> z <- qnorm( alpha/2, lower.tail=FALSE)
> z
[1] 1.880794
> xbar_1 <- -20.80
> #
> hypoth_test_known( H_0, sigma, H_type,
+                    alpha, n_1, xbar_1  )
              H0_mu                   H1:                 sigma
           "-23.95"      "mu !=  -23.95"               "7.84"
                 n             sig level            samp mean
              "27"                "0.06"              "-20.8"
         sd samp mean                how far           test stat
  "1.50880870348222"   "2.83775776543234"   "2.08773981269463"
         critical low         critical high              attained
 "-26.7877577654323"  "-21.1122422345677" "0.0368213114217688"
             decision
             "Reject"
> #
```

```
> # Case 5
> n_1 <- 32
> sigma <- 21.33
> H_0 <- 56.58
> H_type <- 0    # -1 for <, 0 for !=, 1 for >
> alpha <- 0.055
> #  since this is a two tailed test use half alpha
> #      for our computation
> z <- qnorm( alpha/2, lower.tail=FALSE)
> z
[1] 1.918876
> xbar_1 <- 62.73
> #
> hypoth_test_known( H_0, sigma, H_type,
+                    alpha, n_1, xbar_1  )
             H0_mu                  H1:                sigma
          "56.58"      "mu !=  56.58"             "21.33"
                n           sig level           samp mean
             "32"             "0.055"             "62.73"
       sd samp mean            how far           test stat
 "3.77064691067726"  "7.23540471435558"  "1.63101986096475"
      critical low       critical high            attained
 "49.3445952856444"  "63.8154047143556" "0.102886128808405"
          decision
    "do not reject"
> #
> #
> # Case 6
> #
> sigma <- 45.40
> # we need to be sure that gnrnd4() is in the environment
> # before we try to use it
> source("../gnrnd4.R")
> #  we can generate the desired values of the table
> gnrnd4(2887612304,503105466)
style= 4   size= 24    seed= 88761   num digits= 2   alt_sign= 1
[1] "DONE "
> # and now, we will look at the first and last six values
> # just to be sure we have the right values
> head(L1)
[1]  22.76   9.81 110.91  82.61 129.02  56.68
> tail(L1)
[1]  -1.97 -30.93  -2.71  86.08  62.00  72.59
> #
> n_1 <- length( L1 )
> xbar_1 <- mean( L1 )
> s_1 <- sd( L1 )
> #
> # sample size, mean, and standard deviation
> n_1
[1] 24
> xbar_1
[1] 62.93417
> s_1
[1] 61.09572
> H_0 <- 37.06
> H_type <- 0    # -1 for <, 0 for !=, 1 for >
> alpha <- 0.02
> #  since this is a two tailed test use half alpha
> #      for our computation
```

```
> z <- qnorm( alpha/2, lower.tail=FALSE)
> z
[1] 2.326348
> #
> hypoth_test_known( H_0, sigma, H_type,
+                    alpha, n_1, xbar_1  )
               H0_mu                    H1:                  sigma
            "37.06"         "mu !=  37.06"                "45.4"
                 n              sig level             samp mean
              "24"                 "0.02"    "62.9341666666667"
        sd samp mean               how far             test stat
   "9.26723619352969"    "21.5588152170521"     "2.7920046631305"
        critical low         critical high              attained
   "15.5011847829479"    "58.6188152170521" "0.00523826012105619"
            decision
            "Reject"
> #
>
>
> #
> # Case 7
> #
> sigma <- 13.53
> #  we can generate the desired values of the table
> gnrnd4(2605763404,170916566)
style= 4   size= 35    seed= 60576   num digits= 2   alt_sign= 1
[1] "DONE "
> # and now, we will look at the first and last six values
> # just to be sure we have the right values
> head(L1)
[1] 185.62 172.19 161.02 151.48 176.18 194.98
> tail(L1)
[1] 171.86 185.75 165.80 143.91 184.63 168.46
> #
> n_1 <- length( L1 )
> xbar_1 <- mean( L1 )
> s_1 <- sd( L1 )
> #
> # sample size, mean, and standard deviation
> n_1
[1] 35
> xbar_1
[1] 167.2383
> s_1
[1] 16.36883
> H_0 <- 170.48
> H_type <- -1    # -1 for <, 0 for !=, 1 for >
> alpha <- 0.07
> #  since this is a one tailed test leave alpha as is
> #      for our computation
> z <- qnorm( alpha, lower.tail=FALSE)
> z
[1] 1.475791
> #
> hypoth_test_known( H_0, sigma, H_type,
+                    alpha, n_1, xbar_1  )
              H0_mu                    H1:                  sigma
           "170.48"         "mu <  170.48"                "13.53"
                 n              sig level             samp mean
              "35"                 "0.07"   "167.238285714286"
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       sd samp mean              how far           test stat
  "2.28698741329537"   "3.37511550609999"  "-1.41746048398369"
       critical low        critical high            attained
    "167.1048844939"              "n.a." "0.0781741698918905"
           decision
     "do not reject"
> #
> #
> # Case 8
> #
> sigma <- 19.46
> #  we can generate the desired values of the table
> gnrnd4(2698936804,135700556)
style= 4   size= 69    seed= 69893   num digits= 2   alt_sign= 1
[1] "DONE "
> # and now, we will look at the first and last six values
> # just to be sure we have the right values
> head(L1)
[1] -4.81  0.23 11.40 -8.46  9.30  5.14
> tail(L1)
[1] -14.01  -9.63  10.98  26.96  -4.03  12.34
> #
> n_1 <- length( L1 )
> xbar_1 <- mean( L1 )
> s_1 <- sd( L1 )
> #
> # sample size, mean, and standard deviation
> n_1
[1] 69
> xbar_1
[1] 5.773623
> s_1
[1] 12.57767
> H_0 <- 9.02
> H_type <- -1    # -1 for <, 0 for !=, 1 for >
> alpha <- 0.07
> #  since this is a one tailed test leave alpha as is
> #      for our computation
> z <- qnorm( alpha, lower.tail=FALSE)
> z
[1] 1.475791
> #
> hypoth_test_known( H_0, sigma, H_type,
+                    alpha, n_1, xbar_1  )
              H0_mu                  H1:                sigma
             "9.02"        "mu <  9.02"             "19.46"
                 n           sig level           samp mean
              "69"              "0.07"    "5.7736231884058"
       sd samp mean              how far           test stat
  "2.34270870104907"   "3.45734848264549"  "-1.38573643839734"
       critical low        critical high            attained
  "5.56265151735451"              "n.a." "0.0829136986552546"
           decision
     "do not reject"
```