

8.4 TESTING A CLAIM ABOUT A MEAN: σ Known

Assumptions:

1. Sample is a simple random sample.
2. The value of the population standard deviation σ is known.
3. Either or both of these conditions is satisfied: The population is normally distributed or $n > 30$.

We will use three methods, the Traditional Method, the P-value Method and the TI-83. Another method is the Confidence Interval Method (Chapter 7).

When using the Traditional Method, the steps are the same as before, but the Test Statistic is found using this next formula:

Test Statistic:

Test Statistic for μ when σ is known: $z = \frac{\bar{x} - \mu_{\bar{x}}}{\frac{\sigma}{\sqrt{n}}}$

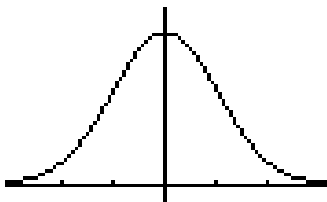
where $\mu_{\bar{x}}$ is the mean of the claim.

Example: The set of 106 body temperatures has a mean of 98.20° . Assume that the sample is a simple random sample and that the population standard deviation σ is known to be 0.62° . Use a 0.05 significance level to test the common belief that the mean body temperature of healthy adults is 98.6° .

Claim: $\alpha =$

H_0 : C.V. =

H_1 : T.S. =



Conclusion:

Now see if you come to the same conclusion using the P-value Method.

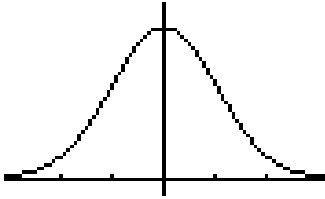
MORE EXAMPLES: (Use the Traditional Method and also find the P-value)

***#16, pg. 431

claim :

H_o :

H_1 :



P-value:

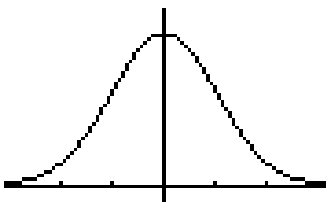
Conclusion:

***#18, pg. 432

claim :

H_o :

H_1 :



P-value:

Conclusion:

USING THE TI-84 FOR HYPOTHESIS TESTING

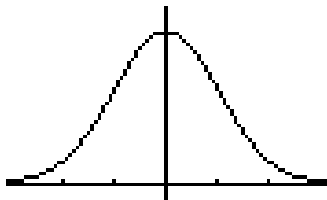
STAT>>TESTS 1:Z-Test

***#18, pg. 431 (Use the calculator)

claim :

H_o :

H_1 :



Conclusion: