|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Params | Context | Dist Z-stat | Shape | Critical Value |
|  | normal  known |  |  |  |
|  | normal  unknown |  |  |  |
|  | Normal  unknown |  |  |  |
|  | large enough |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Params | Context | Sampling dist | Test statistic | Shape |
|  | Normal  known |  |  |  |
|  | Normal  unknown |  |  |  |
|  | Normal  unknown |  |  |  |
|  | Normal  is large enough |  |  |  |

# 9.47.

a)

1. The parameter of interest is the true mean speed, .

2.

3.

4.

5. Reject if where and

6.

7. Because 1.56 > -1.56 fail to reject the null hypothesis. There is insufficient evidence to conclude that the true mean speed is less than 100 at

b) , then

c)

Power =

# 9.75.

a)

b) Test statistic:

We know that,

If , then we should fail to reject . Therefore: and is true

The P-value for the test:

c) 95% two-sided CI on the mean:

We fail to rejected because

# 9.91.

a) A one-sided test because the alternative hypothesis is

b) The test is the normal approximation ( and

c) Sample:

Z-value:

P-value:

95% upper confident interval:

d) P-value for two-side test is:

# 10.66.

1) The parameters of interest are the std

2)

3)

4) The test statistic is

5) Reject the null hypothesis if

6)

7) Conclusion: 1.9565 < 6.16 🡪 fail to reject the null hypothesis.

95% CI:

🡪 There is no significant difference in the variances.

# 10.67.

a)

1) The parameters of interest are the standard deviations

2)

3)

4) The test statistic is

5) Reject the null hypothesis if and for

6)

7) Conclusion: Because 0.33 < 1.2105 < 3, we fail to reject the null hypothesis.

95% CI:

🡪 There is no significant difference in the variances.

b) We get

c) We know that and the is half of than . That sample size is:

# 10-6.

a)

1) The parameter of interest is the difference in mean burning rate,

2)

3)

4) The test statistic is

5) Reject if for

6)

7) Conclusion: Because reject the null hypothesis and conclude the mean burning rates differ significantly at

b) CI for

We are 95% confident that the mean burning rate for solid fuel propellant 2 exceeds that of propellant 1 by between 4.14 and 7.86 cm/s.

c)

🡪 The power of the test in part a) is

d) Assume the sample sizes are to be equal, use

So the sample size is

# 10-82.

1. The test is two-sided.

Value of test statistic

1. P > 0.05 🡪Fail to reject

There is not sufficient evidence to reject the null hypothesis.

1. For confidence level , we have