



2.一組樣本(含次數分配)

2.1)

The random variable X1
sample size=50 , sample mean=8.522439
sample variance=28.681485 , sample standard deviation=5.355510
----- One sample data -----

1. Descripting the sample data and coefficient
2. Testing the population mean and population varicne,
also interval estimated under the population is normal distribution
3. Testing the population probability distribution
4. The auto correlation coefficnet
5. return

選擇 1, Input data

X1
9.3392934007
4.2721754193
0.2162672066
5.4972205233
19.5117367047
7.1263466950
10.1195548189
-1.3576912128
4.7954295230
7.3878315642
0.9790442690
3.6401427517
3.2559681458
11.8441828440
9.3973945923
8.6202182027
3.7882146383
-0.3534317912
7.7970828529
13.4049958524
7.9841718338
4.0607736522
8.2752647297
11.7365668991
14.3506160262
6.7904040711
5.9691049033
13.4322964400
11.0378481172
14.7048243007
7.9870356300
15.2224470099
15.8837225960
1.4622270186
15.8433590886
-0.3202460887
15.6298673053
12.1850400355
18.2351986508
13.4160588366
15.4260922571
11.9112380486
16.1437655997
10.6570118939
7.3531849551
4.2143787556
5.1204856493
5.3225640988
4.5664778378



2.2381813365 X1 is Normal(mu=10.000000,sigma*sigma=25.000000),

Output data

X1 is mean=8.5224387698, s.d.= 5.3555098124, variance= 28.6814853511,
 skewed coefficient=0.0817340914, kurtosis coefficient= 1.9953034597,
 MAD=4.4814895126,
 Q1=4.2721754193, median=7.9856037319, Q3=13.4105273445,
 MIN=-1.3576912128, MAX=19.5117367047, Range=20.8694279175,
 Mid-Range=9.0770227460, C.V.= 0.6284010900, sample size=50

after storing the sample data is below

	X1
1	-1.3576912128
2	-0.3534317912
3	-0.3202460887
4	0.2162672066
5	0.9790442690
6	1.4622270186
7	2.2381813365
8	3.2559681458
9	3.6401427517
10	3.7882146383
11	4.0607736522
12	4.2143787556
13	4.2721754193
14	4.5664778378
15	4.7954295230
16	5.1204856493
17	5.3225640988
18	5.4972205233
19	5.9691049033
20	6.7904040711
21	7.1263466950
22	7.3531849551
23	7.3878315642
24	7.7970828529
25	7.9841718338
26	7.9870356300
27	8.2752647297
28	8.6202182027
29	9.3392934007
30	9.3973945923
31	10.1195548189
32	10.6570118939
33	11.0378481172
34	11.7365668991
35	11.8441828440
36	11.9112380486
37	12.1850400355
38	13.4049958524
39	13.4160588366
40	13.4322964400
41	14.3506160262
42	14.7048243007
43	15.2224470099
44	15.4260922571
45	15.6298673053
46	15.8433590886
47	15.8837225960
48	16.1437655997
49	18.2351986508
50	19.5117367047

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The sample data rank is below

	X1	rank(X1)
1	9.3392934007	29.000
2	4.2721754193	13.000
3	0.2162672066	4.000
4	5.4972205233	18.000
5	19.5117367047	50.000
6	7.1263466950	21.000



7	10.1195548189	31.000
8	-1.3576912128	1.000
9	4.7954295230	15.000
10	7.3878315642	23.000
11	0.9790442690	5.000
12	3.6401427517	9.000
13	3.2559681458	8.000
14	11.8441828440	35.000
15	9.3973945923	30.000
16	8.6202182027	28.000
17	3.7882146383	10.000
18	-0.3534317912	2.000
19	7.7970828529	24.000
20	13.4049958524	38.000
21	7.9841718338	25.000
22	4.0607736522	11.000
23	8.2752647297	27.000
24	11.7365668991	34.000
25	14.3506160262	41.000
26	6.7904040711	20.000
27	5.9691049033	19.000
28	13.4322964400	40.000
29	11.0378481172	33.000
30	14.7048243007	42.000
31	7.9870356300	26.000
32	15.2224470099	43.000
33	15.8837225960	47.000
34	1.4622270186	6.000
35	15.8433590886	46.000
36	-0.3202460887	3.000
37	15.6298673053	45.000
38	12.1850400355	37.000
39	18.2351986508	49.000
40	13.4160588366	39.000
41	15.4260922571	44.000
42	11.9112380486	36.000
43	16.1437655997	48.000
44	10.6570118939	32.000
45	7.3531849551	22.000
46	4.2143787556	12.000
47	5.1204856493	16.000
48	5.3225640988	17.000
49	4.5664778378	14.000
50	2.2381813365	7.000

----- inference statistiscs -----

* Suppose the population distribution is the normal distribution.

1. one population mean test and mu confidence interval when population sigma is unknown

H0: $\mu=0$, μ is population mean

$t(df=49)=11.252475$ which formula is $t=(X1 \text{ sample mean}-0)/\text{standard error}$
the standard error =sample stand deviation/ $(n-1)^{0.5}$, n is sample size=50

left tail test p-value= 1.0000

right tail test p-value= 0.0000

two tails test p-value= 0.0000

90% confidence interval for μ

[7.252602 , 9.792276]

95% confidence interval for μ

[7.000587 , 10.044290]

99% confidence interval for μ

[6.493052 , 10.551826]



2. one population sigma confidence interval when population mean is unknown

90% confidence interval for population variance

[21.184917 , 41.417949]

90% confidence interval for population standard deviation

[4.602708 , 6.435678]

95% confidence interval for population variance

[20.014735 , 44.537524]

95% confidence interval for population standard deviation

[4.473783 , 6.673644]

99% confidence interval for population variance

[17.964712 , 51.574695]

99% confidence interval for population standard deviation

[4.238480 , 7.181552]

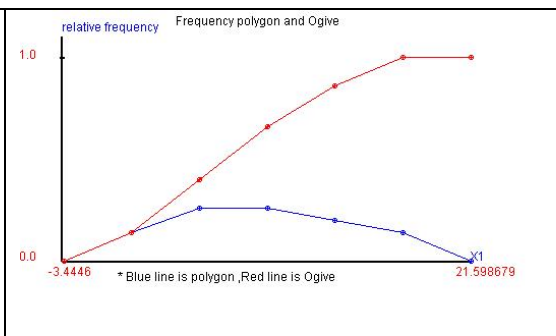
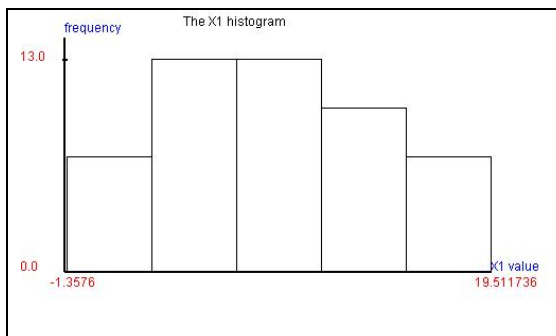
random variable X1

class	class limit	class midpoint	frequency	relative
[1]	-1.35769~	2.81619	7.00000	0.140000
[2]	2.81619~	6.99008	13.00000	0.260000
[3]	6.99008~	11.16397	13.00000	0.260000
[4]	11.16397~	15.33785	10.00000	0.200000
[5]	15.33785~	19.51174	7.00000	0.140000

frequency distribution: sample mean=8.826590 , sample variance=27.462970 , sample sd=5.240512

The histogram is stored in c:\book_01\histogramX_image.txt

The polygon and ogive is stored in c:\book_01\polygonX_image.txt





2.2)

The random variable X1
sample size=50 , sample mean=8.522439
sample variance=28.681485 , sample standard deviation=5.355510
 ----- One sample data -----

1. Descripting the sample data and coefficient
2. Testing the population mean and population varicne,
also interval estimated under the population is normal distribution
3. Testing the population probability distribution
4. The auto correlation coefficnet
5. return

選擇 2,

The random variable X1
sample size=50 , sample mean=8.522439
sample variance=28.681485 , sample standard deviation=5.355510
 ----- One population mu and sigma test -----

1. One population mu test , the population sigma is known
there need input Ho mu value and sigma value
2. One population mu test , the population sigma is unknown
there need input Ho mu value
3. One population sigma test , the population mu is known
there need input Ho sigma value and mu value
4. One population sigma test , the population mu is unknown
there need input Ho sigma value
5. The population disitribution whether normal distribution test
6. return

選擇 2,

Input data

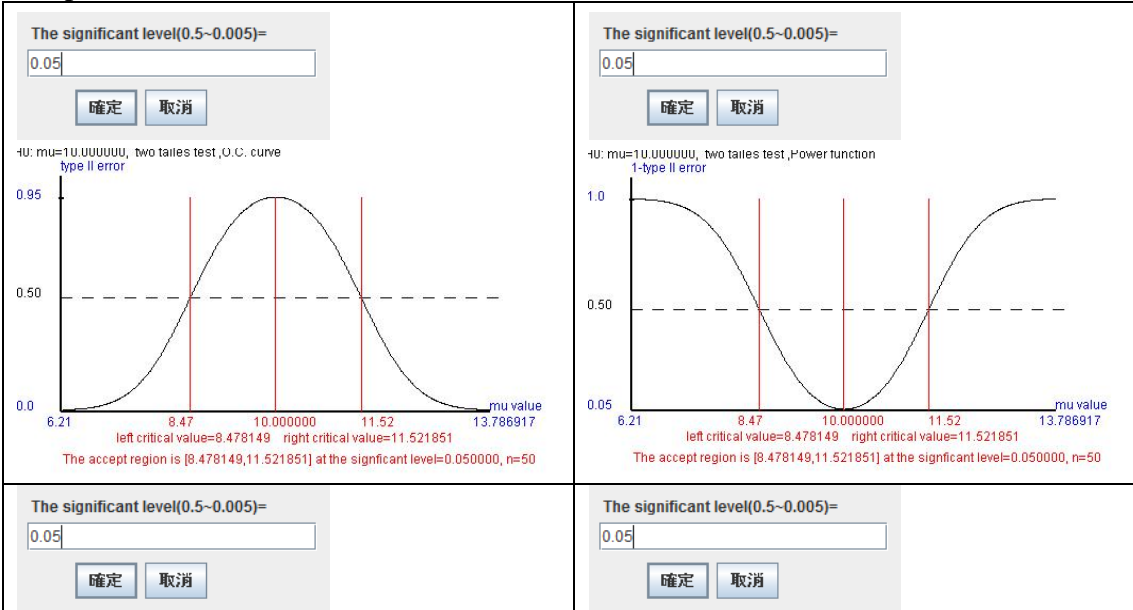
X1
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5.4972205233
19.5117367047
7.1263466950
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-1.3576912128
4.7954295230
7.3878315642
0.9790442690
3.6401427517
3.2559681458
11.8441828440
9.3973945923

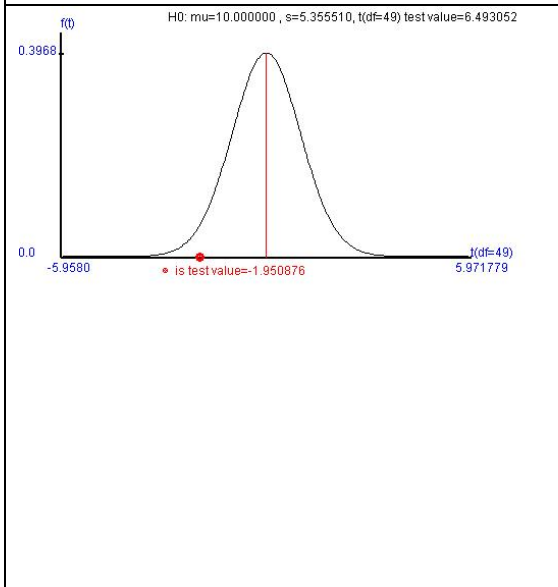
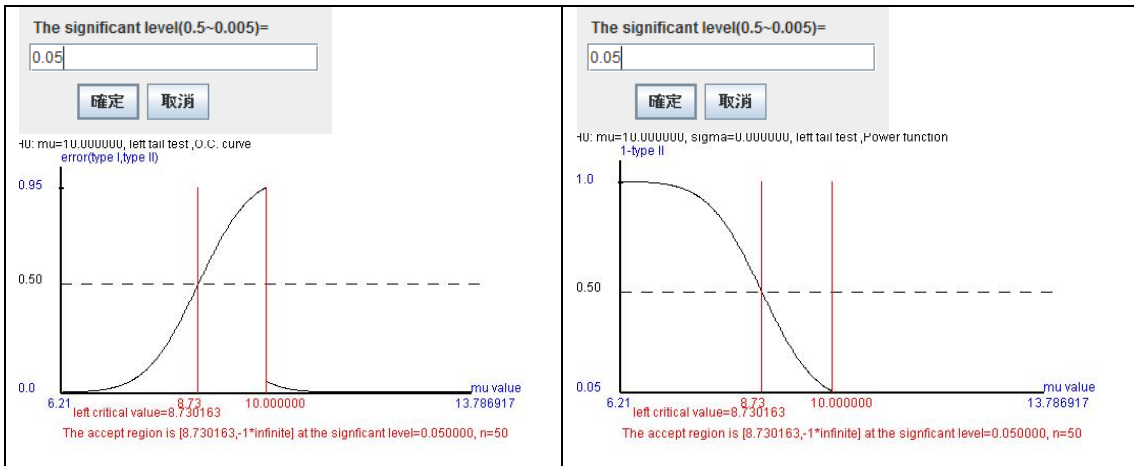
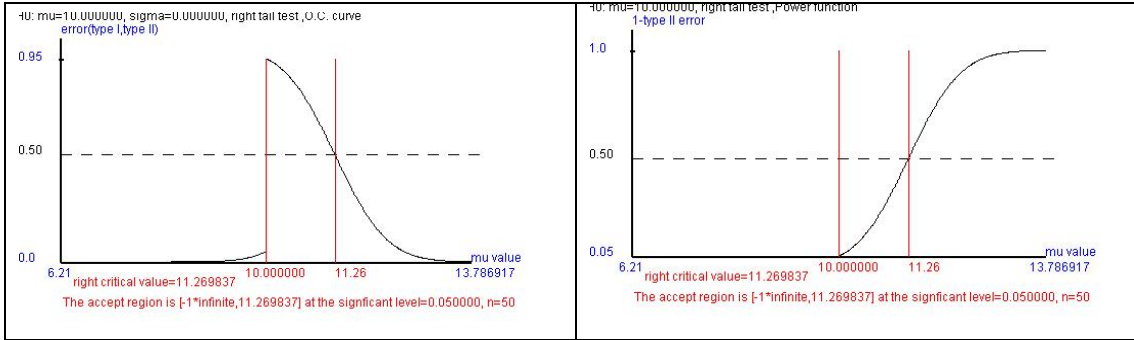


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 2.2381813365

X1 is Normal($\mu=10.000000$, $\sigma^2=25.000000$),

Output data





One population mean test, the population standard deviation is unknown

$H_0: \mu = 10.000000$, μ is population mean, the sample standard deviation = 5.355510

The sample mean = 8.522439

the test statistic $t(df=49) = -1.950876$, which formula is $t = (\bar{X} - \mu) / \text{standard error}$

the standard error = sample standard deviation / $(n-1)^{0.5}$, n is sample size = 50

left tail test p-value = 0.0284

right tail test p-value = 0.9716

two tails test p-value = 0.0568

90% confidence interval for μ [7.252602, 9.792276]

95% confidence interval for μ [7.000587, 10.044290]

99% confidence interval for μ [6.493052, 10.551826]

