

STATISTICS



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QUESTION 1

X (Number of admission)	P	XP	X ²	X ² P
1000	0.2	200	1000000	200000
1200	0.3	360	1440000	432000
1400	0.4	560	1960000	784000
1600	0.1	160	2560000	256000
		$\sum XP = 1280$		$\sum X^2P = 1672000$

$$\mu = \sum XP = 1280$$

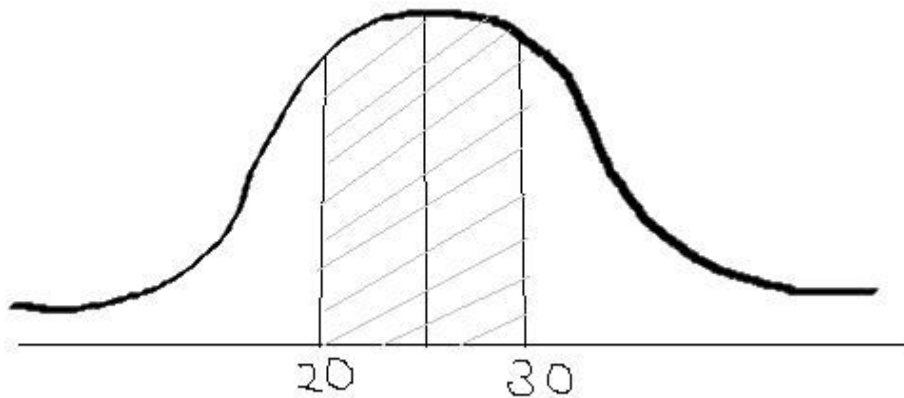
Standard deviation = $\sqrt{\text{variance}}$ (Elearn, 2013)

$$\text{Variance} = \sum X^2P - (\mu)^2 = 1672000 - 1638400 = 33600$$

Standard deviation = $\sqrt{33600} = 183.30$ number of admission

QUESTION 2

Drawing representing the distribution:



X	P	XP	X ²	X ² P
20	0.5	10	400	200
30	0.5	15	900	450
		$\sum XP = 25$		$\sum X^2P = 650$

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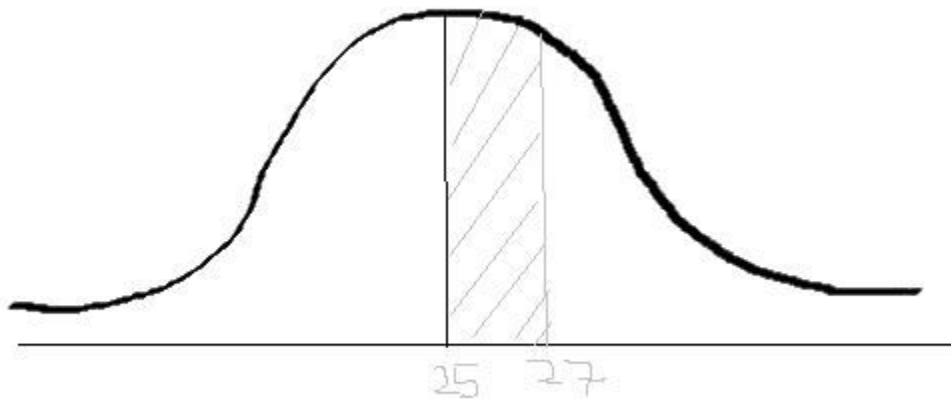
$$\mu = \sum XP = 25$$

Standard deviation = $\sqrt{\text{variance}}$

$$\text{Variance} = \sum X^2P - (\mu)^2 = 650 - 625 = 25$$

$$\text{Standard deviation} = \sqrt{25} = 5$$

Probability that the stock price will be more than \$27:



Where;

X = represents the value

μ = Mean (Helfert, 2004)

SD = Standard Deviation

Normal curve value of (0.4) is = 0.6554

Probability that stock price will more than \$27 = $1 - 0.6554 = 0.345 = 34.5\%$

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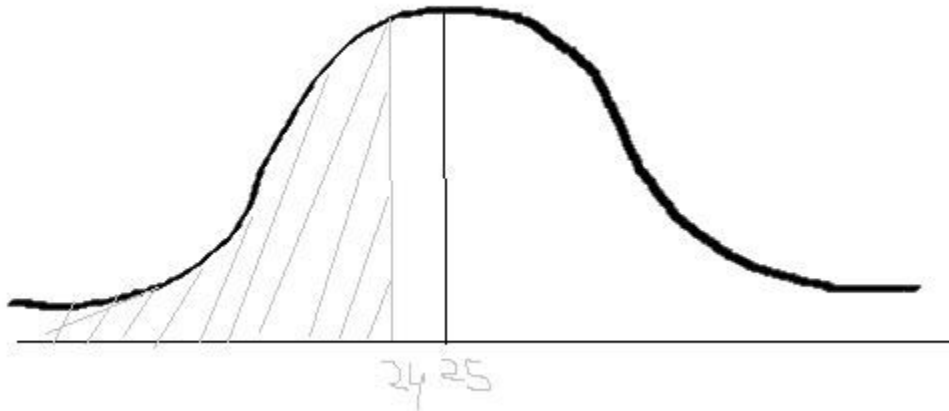
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Probability that the stock price will be less than or equal to \$24:



Normal curve value of (0.2) is = 0.5793

Probability that stock price will be less than or equal to \$24 = $1 - 0.5793 = 0.4207 = 42.07\%$

QUESTION 3

List of major characteristics of normal distribution:

1. Normal distribution is bilaterally symmetrical around its mean.
2. In a normal distribution mean, mode and median are equal.
3. The whole area of normal curve represents total probability which is equal to 1.
4. In curve normal distributions in tails are less than as compare to center section.
5. Normal distribution is defined on the basis of (U) mean and standard deviation.
6. Normal distribution is used the bell shaped curve (Helfert, 2004).
7. In the normal distribution 50% values are less than the mean and 50% values are greater than the mean value.

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Drawing which represents mean, mode and median:

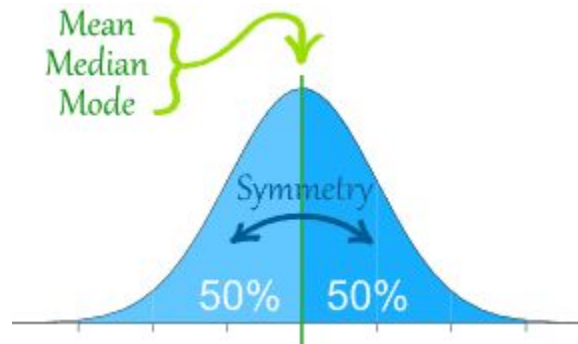


Figure 1: Normal distribution with mean, mode and median

QUESTION 4

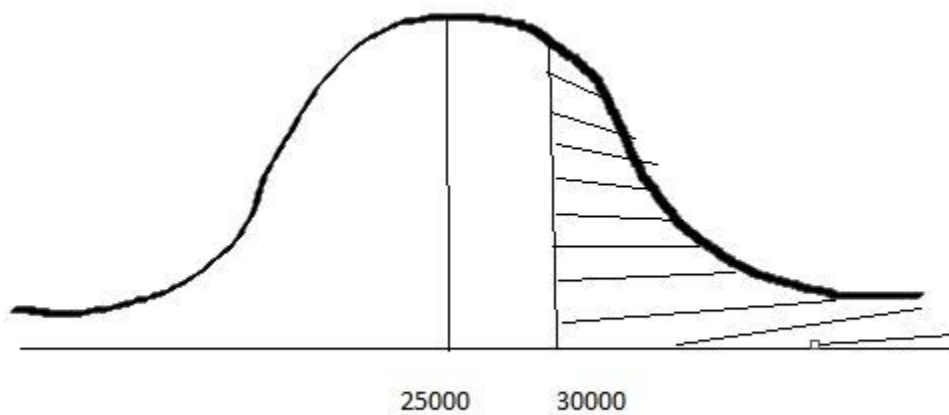
Earning of Marwan and Hamad= AED 30,000 per month

Percentage of the people makes more money than Marwan in the private sector:

X= more than AED 30000

μ = AED 25000

SD = AED 4000



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Normal curve value of (0.25) is = 0.8944

(Probability > AED 30000 in the private sector) = $1 - 0.8944 = 0.1056 = 10.56\%$

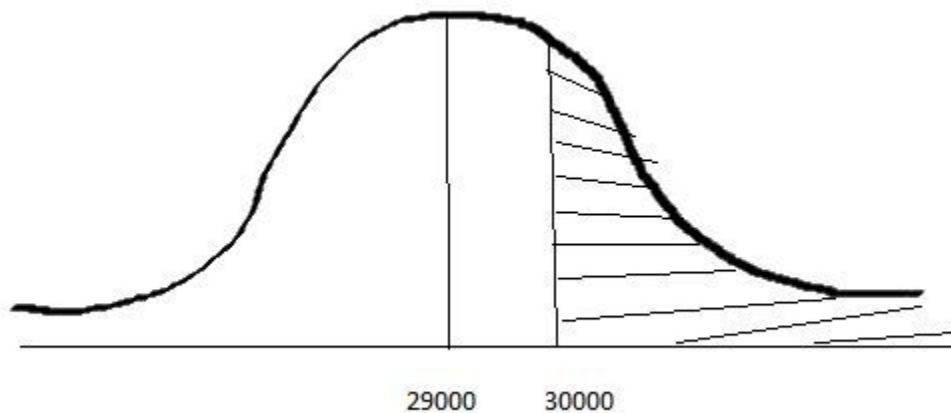
Therefore, 10.56% of the people make more money than Marwan in the private sector

Percentage of the people makes more money than Hamad in the Government sector:

X = more than AED 30000

μ = AED 29000

SD = AED 2000



Normal curve value of (0.5) is = 0.6915

(Probability > AED 30000) = $1 - 0.6915 = 0.3085 = 30.85\%$

Therefore, 30.85% of the people make more money than Hamad in the private sector.

Who is doing relatively better? Why?

Marwan is relatively better than Hamad because only 10.56% people make money more than Marwan in the government sector (Helfert, 2004). But, in case of Hamad, 30.85% people make money more than Hamad.

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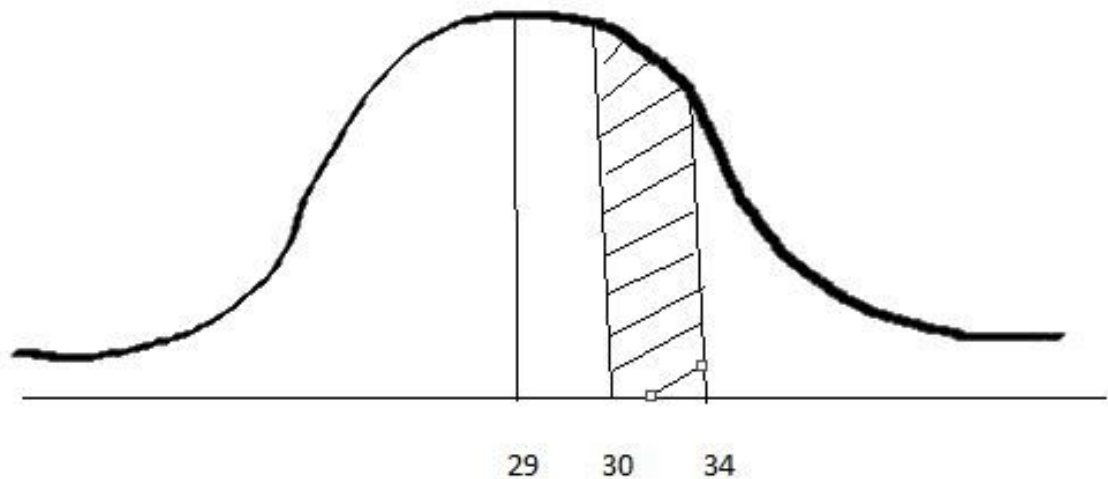
QUESTION 5

X = Between 30 to 34

μ = 29 million

SD = 5 million

Probability between 30 to 34 million viewer of Arab idol:



Z score value between 30 and 34 million viewer of Arab idol:

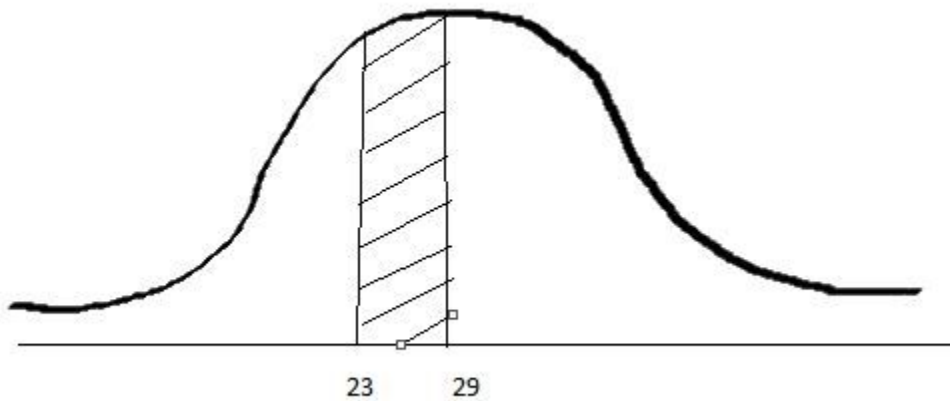
Probability between 30 to 34 million viewer of Arab idol = 26.2%

Probability for at least 23 million viewer of Arab idol:

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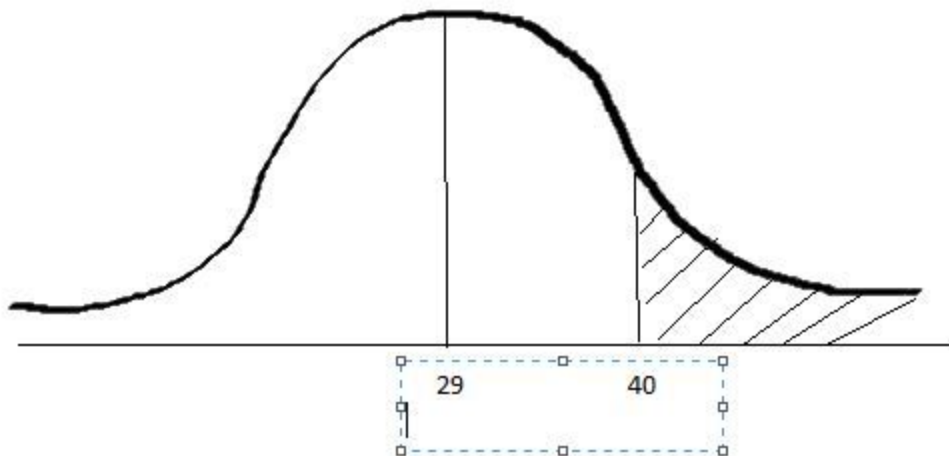
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Z score value of (-1.2) = 0.8849

Probability for at least 23 million viewer of Arab idol = 88.49%

Probability for exceeding 40 million viewer of Arab idol:



Z score value of (2.2) = 0.9868

Probability for exceeding 40 million viewer of Arab idol = $1 - 0.9868 = 0.0132 = 1.32\%$

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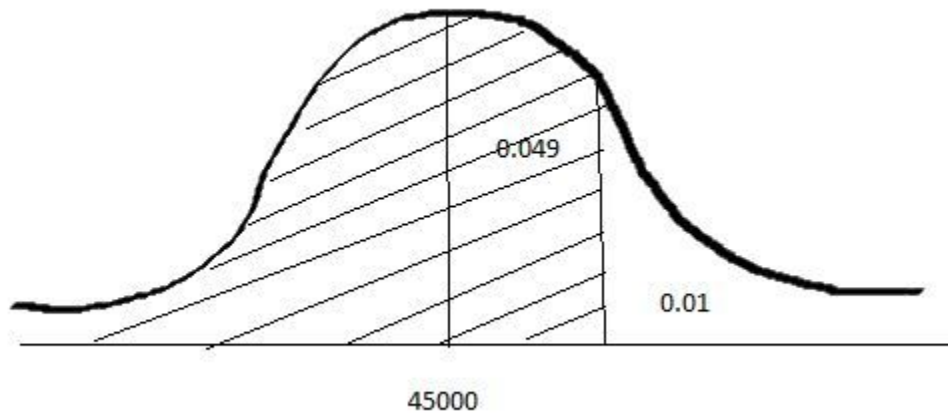
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QUESTION 6

Mean annual cost to attend a private university in the Dubai = AED 45000

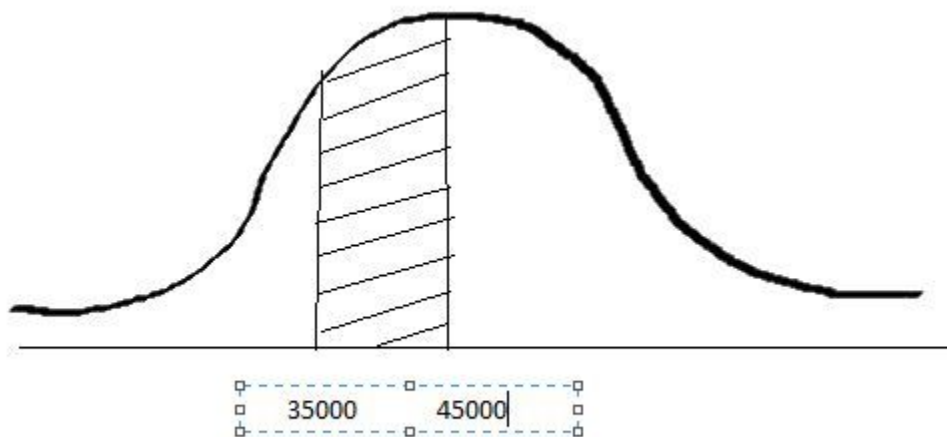
Standard deviation = AED 4500

Amount of 90% student at private university pay less than:



$$X = 55530$$

Percentage of the students pay more than AED 35,000:



Z score value of 2.22 = 0.4861

Hence, 48.61% students pay more than AED 35000.

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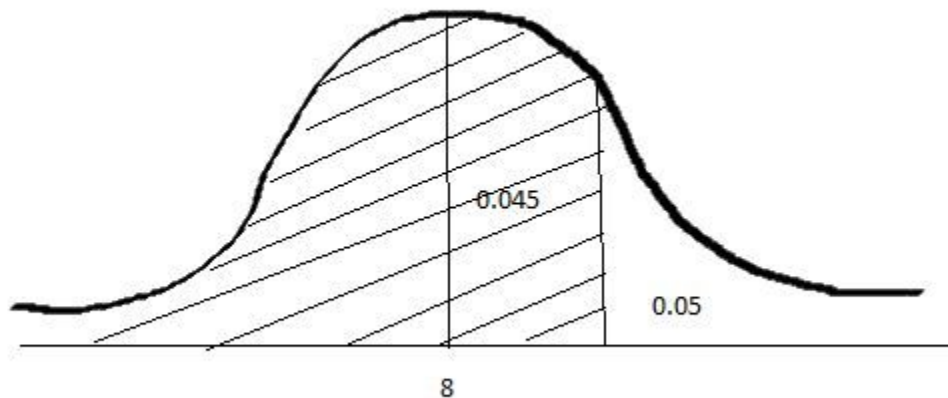
QUESTION 7

Confidence interval = 95%

Level of significance = 5%

$\mu = 29$ million

SD = 5 million



$$X = 12.60 \approx 13 \text{ students}$$

QUESTION 8

Sample mean = 10

Population mean = 8

Standard deviation of population = 4

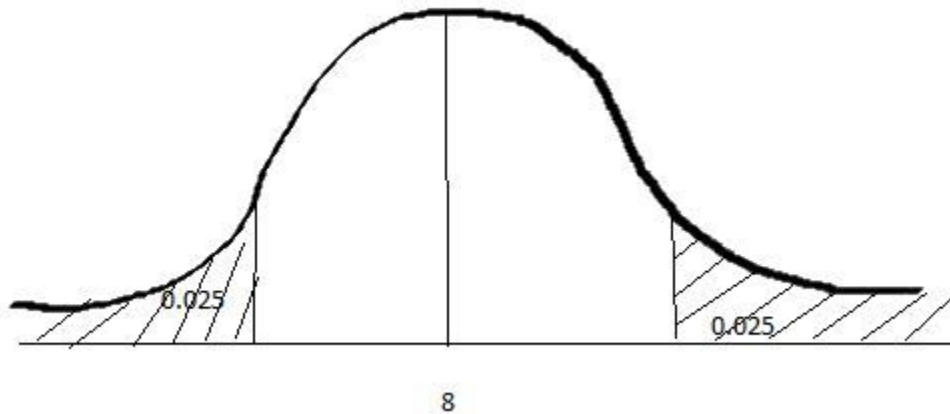
Null hypothesis = H_0 = Students has not misspell at least 10 words in an essay. (Sample mean = population mean)

Alternative hypothesis = H_a = Students misspell at least 10 words in an essay. (Sample mean > population mean) (Grieve, 2013).

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Calculated value of $t = 3.03$

Tabulated value of t on 5% level of significance and 35 ($n-1$) degree of freedom = 2.021

Since, calculated value $>$ tabulated value

So, null hypothesis has rejected and alternative hypothesis has accepted which states that students misspell at least 10 words in an essay.

QUESTION 9

Confidence interval can be changed by changing the level of significance. For example, if I chose 5% level of significance then it will automatically represent 95% confidence interval. On other words, if I select 1% level of significance then it will show the 99% confidence interval. More confidence interval represent the more accuracy and less error as compare to higher width confidence interval (Troy, 2008).

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QUESTION 10

$$\mu = 3;$$

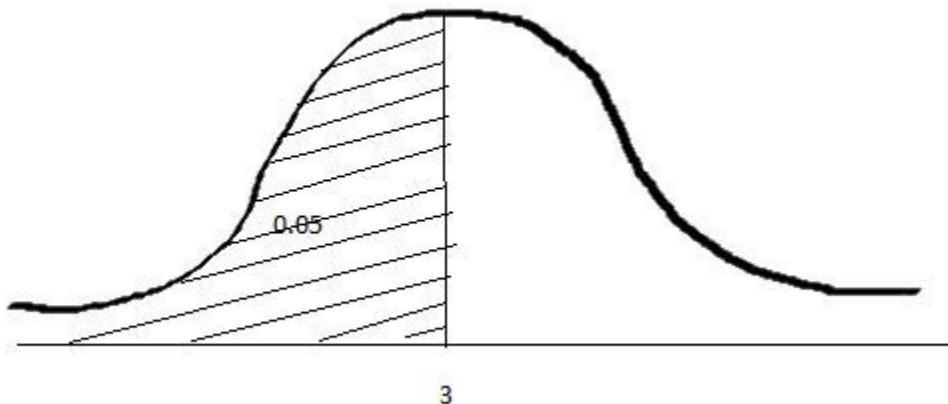
$$SD = 1.5;$$

$$\mu_1 = 49$$

$$n_1 = 2.75$$

Null hypothesis= H_0 = Mean waiting time of customers of Airport Road Falafel is not equal to the mean waiting for customers at Falafel restaurants. (Population mean = Sample mean)

Alternative hypothesis= H_a = Mean waiting time of customers of Airport Road Falafel is less than mean waiting for customers at Falafel restaurants. (Population mean < Sample mean)



T test will be most appropriate for hypothesis testing because sample size is 49 which is greater than 30. So, t test will be appropriate. Critical value for 5% level of significance and (n-1), 48 degree of freedom is 1.684.

Calculated value for t test= 1.168

Tabulated value of t test = 1.684.

Calculated value < tabulated value; $1.168 < 1.684$

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Therefore, null hypothesis will be accepted and alternative will be rejected. Null hypothesis has reflected that mean waiting time of customers of Airport Road Falafel is not equal to the mean waiting for customers at Falafel restaurants.

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