

According to surveys in 2020 and 2019, the average annual tuition fee at community colleges in the USA was \$26,800 in 2020 and \$24,750 in 2019. Suppose that these averages are based on random samples of 300 and 250 colleges in 2020 and 2019, respectively. Further assume that the population standard deviations for 2020 and 2019 were \$2500 and \$2250, respectively. Let  $\mu_1$  and  $\mu_2$  be the population means for annual tuition fees for the years 2020 and 2019, respectively. (a) Construct a 90% confidence interval for  $\mu_1 - \mu_2$  (b) Test at a 10% significance level whether the population means for the two years are different. Please refer to the following and select the correct alternative/s in the questions below (for numeric alternatives, choose the closest one please)

1. Please refer to the above and select the correct set of hypotheses to be tested. \*

1 point

- a.  $H_0: \mu_1 \neq \mu_2; H_1: \mu_1 = \mu_2$
- b.  $H_0: \mu_1 = \mu_2; H_1: \mu_1 \neq \mu_2$
- c.  $H_0: \mu_1 = \mu_2; H_1: \mu_1 > \mu_2$
- d.  $H_0: \mu_1 = \mu_2; H_1: \mu_1 < \mu_2$

2. Please refer to the above and select the correct nature of hypothesis test. \*

1 point

- a. It's a left-tailed test
- b. It's a right-tailed test
- c. It's a two-tailed test

3. Please refer to the graphic below and select the correct alternative/s corresponding to (A) through (H), from the rest of the questions (for numeric alternatives, choose the closest one please)

Solution:					
n1=	300	avgx1=	\$26,800	$\sigma_1=$	\$2,500
n2=	250	avgx2=	\$24,750	$\sigma_2=$	\$2,250
$\alpha=$	10%				
critical value of z=	(A)	(from Table)		for $\alpha=$	0.05
point estimate of $\mu_1 - \mu_2 =$	(B)				
point estimate of $\sigma_{\bar{x}_1 - \bar{x}_2} =$	(C)				
90% CI for $\mu_1 - \mu_2 =$		(D)	to	(E)	
Test statistic, z=	(F)				
(G)	the Null hypothesis				
Conclusion:	(H)				

4. Please refer to the above and select the correct alternative/s corresponding to (A), from the following (for numeric alternatives, choose the closest and absolute one please)

1 point

- a. 3.1
- b. 2.3
- c. 1.65
- d. 1.28
- e. 2.58

5. Please refer to the above and select the correct alternative/s, corresponding to (B) from the following (for numeric alternatives, choose the closest one please) \*

1 point

- a. \$50
- b. \$250
- c. \$2,050
- d. \$25,775

6. Please refer to the above and select the correct alternative/s, corresponding to (C) from the following (for numeric alternatives, choose the closest one please) \*

1 point

- a. \$198
- b. \$200
- c. \$203
- d. \$205

7. Please refer to the above and select the correct alternative/s, corresponding to (D) & (E) from the following (for numeric alternatives, choose the closest one please) \*

2 points

- a. \$1610 & \$2490
- b. \$1653 & \$2447
- c. \$1716 & \$2384
- d. None of the above

8. Please refer to the above and select the correct alternative/s, corresponding to (F) from the following (for numeric alternatives, choose the closest one please) \*

1 point

- a. 1.65
- b. 1.96
- c. 2.17
- d. 10.11

9. Please refer to the above and select the correct alternative/s, corresponding to (G) from the following (for numeric alternatives, choose the closest one please) \*

1 point

- a. reject
- b. fail to reject

10. Please refer to the above and select the correct alternative/s, corresponding to (H) from the following (for numeric alternatives, choose the closest one please) \*

1 point

- a. There is not significant evidence to reject the claim that average annual tuition fee at community college in the USA were equal for 2020 and 2019
- b. The average annual tuition fee at community college in the USA were different for 2020 and 2019
- c. The average annual tuition fee at community college in the USA in 2020 was higher than that in 2019
- d. The average annual tuition fee at community college in the USA in 2020 was lower than that in 2019