

Topic – 7.2 (Estimating a Population Mean)

Complete this quiz on your own paper. Then scan it as a pdf and submit it to Blackboard.

1. [2 points] Suppose you select 25 Douglas College students at random and determine their ages.

Using those 25 numbers, you calculate the sample mean, $\bar{X} = 21.5$ years, and sample standard deviation, $s = 3.1$ years.

The confidence interval for μ , the population mean age of Douglas College students, at confidence level $1 - \alpha$, is:

$$\left(\bar{X} - t_{\alpha/2} \cdot \frac{s}{\sqrt{n}}, \bar{X} + t_{\alpha/2} \cdot \frac{s}{\sqrt{n}} \right)$$

a. Determine the critical t value for a 99% confidence level.

b. Find the 99% confidence interval for μ .

2. [2 points] Suppose that you are unhappy with this confidence interval because the margin of error, E , is too large. Which of the following would decrease the margin of error?

Pick one and *explain* why it decreases the margin of error.

- i. Use a smaller n .
- ii. Use a lower α
- iii. Use a lower confidence level, (i.e., lower $1 - \alpha$).