

Math 5090

8/31/2016

Given a random sample of size 100 with sample mean of 2 from a  $N(\mu, 1)$  population, give a 95% one-sided lower confidence limit by doing the following steps. Note that  $z_{0.05} = -1.645$ .

Write an appropriate probability statement.

$$.95 = P\left(z_{0.05} < \frac{\mu - \bar{X}}{\frac{1}{10}}\right) = P\left(-1.645 < \frac{\mu - \bar{X}}{\frac{1}{10}}\right)$$

Rewrite the statement to isolate  $\mu$ .

$$= P\left(\bar{X} - 0.1645 < \mu\right)$$

Write the random interval; it should be in the form (expression,  $\infty$ ).

$$(\bar{X} - 0.1645, \infty)$$

Write the outcome of the random interval (i.e. confidence interval).

$$(2 - 0.1645, \infty) = (1.8355, \infty)$$

Write the 95% one-sided lower confidence limit.

1.8355