

MITx: 14.310x Data Analysis for Social Scientists

<u>Hel</u>j



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# Finding the Area Under the Curve Using R - Quiz

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## **Question 1**

1/1 point (graded)

Let x=0.75. Without typing into your R console. What should you get for an output of qnorm(0.75,lower.tail=TRUE),lower.tail=TRUE)?

0.75 **✓** Answer: 0.75

#### **Explanation**

As discussed in class, the function pnorm(x) takes in a value x and returns the CDF of a normal distribution at x. The function qnorm(x) gives the value at which the CDF of the standard normal is x. Thus applying both functions are inverses of each other, and thus applying x to the composite function will return x, if the value is in both domains.

Submit You have used 1 of 2 attempts

- Module 5: Moments of a Random Variable. Applications to Auctions, & Intro to Regression
- **▼** Module 6: Special Distributions, the Sample Mean, the Central Limit Theorem. and Estimation

## **Human Subjects and Special Distributions**

Finger Exercises due Nov 07, 2016 at 05:00 IST

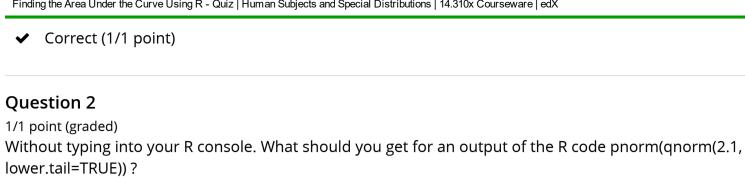
# The Sample Mean, Central Limit Theorem, and **Estimation**

Finger Exercises due Nov 07, 2016 at 05:00 IST

#### Module 6: Homework

Homework due Oct 31, 2016 at 05:00 IST

Exit Survey





## **Explanation**

The function qnorm(x) gives the value at which the CDF of the standard normal is x. Since the cumulative distribution function can at most take the value of 1, the function is undefined when x=2.1, thus your R code should produce an error NaN (Not a Number) when trying to compute gnorm(2.1), which will produce an error for the whole function.

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You have used 1 of 2 attempts

✓ Correct (1/1 point)

## **Question 3**

1/1 point (graded)

Malia is applying to medical school and has to take the MCAT. To get into the school of her dreams she has to score in the top 20% of all test takers for her year. Last year in 2015 the MCAT had a mean of 500 and a standard deviation of 10.6. Assuming a normal distribution and based on what was discussed in class what simple R code would you write to estimate the score she would need in to get into her dream school?

Using qnorm(A, B, C), fill in what you would input for each of A, B, and C.

What is the input for A?



What is the input for B?



What is the input for C?

10.6 **✓ Answer:** 10.6

10.6

## **Explanation**

The qnorm(x,m,sd) function is the inverse of the cumulative distribution function for a normal distribution with a mean m, a standard deviation sd. That is it gives you the value at which the CDF of the normal distribution is x. Since Malia wants to score in the top 20 percent, her score has to place her at least above 80 percent, or 0.8 of all the other test takers.

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You have used 2 of 2 attempts

✓ Correct (1/1 point)

#### Discussion

**Topic:** Module 6 / Finding the Area Under the Curve Using R - Quiz

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