



MITx: 6.041x Introduction to Probability - The Science of Uncertainty



Bookmarks

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Unit overview

Lec. 8: Probability density functions

Exercises 8 due Mar 16, 2016 at 23:59 UTC

Lec. 9: Conditioning on an event; Multiple r.v.'s
Exercises 9 due Mar 16, 2016 at 23:59 UTC

Lec. 10: Conditioning on a random variable; Independence; Bayes' rule

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Standard normal table

Solved problems

Problem Set 5

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Unit summary

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Bookmark

Exercise: Using the normal tables

(3/3 points)

Let X be a normal random variable with mean 4 and variance 9. Use the normal table to find the following probabilities, to an accuracy of 4 decimal places.

a) $P(X \leq 5.2) =$ ✓ Answer: 0.6554

b) $P(X \geq 2.8) =$ ✓ Answer: 0.6554

c) $P(X \leq 2.2) =$ ✓ Answer: 0.2743

Answer:

a) Note that the standard deviation is 3. Subtracting the mean and dividing by the standard deviation, we obtain

$$P(X \leq 5.2) = P\left(\frac{X - 4}{3} \leq \frac{5.2 - 4}{3}\right) = \Phi(0.4) = 0.6554.$$

b) Because of the symmetry around the mean,

$$P(X \geq 2.8) = P(X \leq 5.2) = 0.6554.$$

c)

$$P(X \leq 2.2) = P\left(\frac{X - 4}{3} \leq \frac{2.2 - 4}{3}\right) = \Phi(-0.6) = 1 - \Phi(0.6) = 1 - 0.7257 = 0.2743$$

You have used 1 of 2 submissions

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