



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



Bookmarks

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- ▶ Entrance Survey
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Unit overview

Lec. 5: Probability mass functions and expectations

Exercises 5 due Mar 02, 2016 at 23:59 UTC

Lec. 6: Variance; Conditioning on an event; Multiple r.v.'s

Exercises 6 due Mar 02, 2016 at 23:59 UTC

Lec. 7: Conditioning on a random variable; Independence of r.v.'s

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Bookmark

Exercise: Geometric random variables

(2/2 points)

Let X be a geometric random variable with parameter p . Find the probability that $X \geq 10$. Express your answer in terms of p using standard notation .

 $P(X \geq 10) =$

Answer: $(1-p)^9$

Answer:

We can calculate the desired probability by adding the probabilities of the events $\{X = 10\}$, $\{X = 11\}$, $\{X = 12\}$, etc., and using the formula for the sum of a geometric series. However, we can get the answer in an easier way, using the interpretation of geometric random variables as the number of trials until the first success. The event $\{X \geq 10\}$ is the event that the first 9 trials resulted in failure, and therefore its probability is $(1 - p)^9$.

You have used 2 of 2 submissions

Exercises 7 due Mar
02, 2016 at 23:59 UTC

Solved problems

**Additional
theoretical
material**

Problem Set 4

Problem Set 4 due Mar
02, 2016 at 23:59 UTC

Unit summary

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