



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



Bookmarks

▶ Unit 0:  
Overview

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Survey

▼ Unit 1:  
Probability  
models and  
axioms

**Lec. 1: Probability  
models and  
axioms**

Exercises 1 due Feb  
10, 2016 at 23:59 UTC

**Mathematical  
background: Sets;  
sequences, limits,  
and series;  
(un)countable sets.**

**Solved problems**

**Problem Set 1**

Problem Set 1 due Feb  
10, 2016 at 23:59 UTC

Unit 1: Probability models and axioms > Solved problems > The probability of the difference of two events



Bookmark

**The probability of the difference of two events.** Give a mathematical derivation of the formula

$$\mathbf{P}\left((A \cap B^c) \cup (A^c \cap B)\right) = \mathbf{P}(A) + \mathbf{P}(B) - 2 \cdot \mathbf{P}(A \cap B),$$

for the probability that exactly one of the events  $A$  and  $B$  will occur. Your derivation should be a sequence of steps, with each step justified by appealing to one of the probability axioms.

Teaching Assistant: Kuang Xu



In this problem, we're going to use the set of probability

axioms to derive the probability of the difference of two events.

Now, before we get started, there's

one thing you might

▶ 0:00 / 5:54

▶ 1.0x



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A written solution to this problem can be found here .

## DISCUSSION

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