



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



Bookmarks

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Bookmark

## Problem 2: Find the limits

(3/3 points)

Let  $S_n$  be the number of successes in  $n$  independent Bernoulli trials, where the probability of success for each trial is  $1/2$ . Provide a numerical value, to a precision of 3 decimal places, for each of the following limits. You may want to refer to the standard normal table .

1.

$$\lim_{n \rightarrow \infty} \mathbf{P} \left( \frac{n}{2} - 20 \leq S_n \leq \frac{n}{2} + 20 \right) =$$

0



2.

$$\lim_{n \rightarrow \infty} \mathbf{P} \left( \frac{n}{2} - \frac{n}{3} \leq S_n \leq \frac{n}{2} + \frac{n}{3} \right) =$$

1




3.


- ▶ Unit 6: Further topics on random variables
- ▶ Unit 7: Bayesian inference
- ▶ Exam 2
- ▼ **Unit 8: Limit theorems and classical statistics**

#### Unit overview


##### Lec. 18: Inequalities, convergence, and the Weak Law of Large Numbers

Exercises 18 due Apr 27, 2016 at 23:59 UTC 

##### Lec. 19: The Central Limit Theorem (CLT)

Exercises 19 due Apr 27, 2016 at 23:59 UTC 

##### Lec. 20: An introduction to classical statistics

Exercises 20 due Apr 27, 2016 at 23:59 UTC 

$$\lim_{n \rightarrow \infty} \mathbf{P} \left( \frac{n}{2} - \frac{\sqrt{n}}{4} \leq S_n \leq \frac{n}{2} + \frac{\sqrt{n}}{4} \right) =$$

0.3829249



*You have used 1 of 2 submissions*


## DISCUSSION

Click "Show Discussion" below to see discussions on this problem.

Solved problems

Additional theoretical  
material

**Problem Set 8**

Problem Set 8 due Apr 27, 2016  
at 23:59 UTC 

Unit summary

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