

Lesson 3.1

测验, 10 个问题

10/10 分 (100%)

✓ 恭喜! 您通过了!

下一项



1 / 1 分

1。

When using random variable notation, big X denotes _____.



a random variable



正确



a conditional probability



distributed as



a realization of a random variable



the expectation of a random variable



approximately equal to



1 / 1 分

2。

When using random variable notation, little x denotes _____.



a random variable



a conditional probability



distributed as



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a realization of a random variable



正确

It is a possible value the random variable can take



the expectation of a random variable



approximately equal to

10/10 分 (100%)



1 / 1 分

3.

When using random variable notation, $X \sim$ denotes _____.



a random variable



a conditional probability



distributed as



正确



a realization of a random variable



the expectation of a random variable



approximately equal to



1 / 1 分

4.

What is the value of $f(x) = -5I_{\{x>2\}}(x) + xI_{\{x<-1\}}(x)$ when $x = 3$?

-5



正确回答

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Only the first term is evaluated as non-zero.

10/10 分 (100%)



1 / 1 分

5。

What is the value of $f(x) = -5I_{\{x>2\}}(x) + xI_{\{x<-1\}}(x)$ when $x = 0$?

0

正确回答

All indicator functions evaluate to zero.



1 / 1 分

6。

Which of the following scenarios could we appropriately model using a Bernoulli random variable?



Predicting whether your hockey team wins its next game (tie counts as a loss)

正确

Whether they win is a binary outcome which can only take on values $\{0, 1\}$.



Predicting the number of goals scored in a hockey match



Predicting the weight of a typical hockey player



Predicting the number of wins in a series of three games against a single opponent (ties count as losses)



1 / 1 分

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7.
Calculate the expected value of the following random variable: X takes on values $\{0, 1, 2, 3\}$ with corresponding probabilities $\{0.5, 0.2, 0.2, 0.1\}$. Round your answer to one decimal place.

10/10 分 (100%)

0.9

正确回答

This is $0(.5) + 1(.2) + 2(.2) + 3(.1)$.



1 / 1 分

8.
Which of the following scenarios could we appropriately model using a binomial random variable (with $n > 1$)?

- ☐ Predicting whether your hockey team wins its next game (tie counts as a loss)
- ☐ Predicting the number of goals scored in a hockey match
- ☐ Predicting the weight of a typical hockey player
- ☒ Predicting the number of wins in a series of three games against a single opponent (ties count as losses)

正确

The binomial model assumes a fixed number of independent trials, each with the same probability of success.



1 / 1 分

9.
Suppose $X \sim \text{Binomial}(3, 0.2)$. Calculate $P(X = 0)$. Round your answer to two decimal places.

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0.51

10/10 分 (100%)

正确回答

This is $P(X = 0) = \binom{3}{0} 0.2^0 0.8^3$.



1 / 1 分

10.

Suppose $X \sim \text{Binomial}(3, 0.2)$. Calculate $P(X \leq 2)$. Round your answer to two decimal places.

0.99

正确回答

This is $P(X = 0) + P(X = 1) + P(X = 2)$
 $= \binom{3}{0} 0.2^0 0.8^3 + \binom{3}{1} 0.2^1 0.8^2 + \binom{3}{2} 0.2^2 0.8^1$
 $= 1 - P(X = 3)$

