

Review for Test 2:

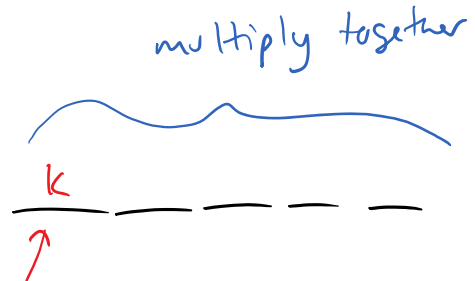
Monday, November 25, 2019 10:51 AM

probability:

(4.1)

counting techniques

multiplication rule:



k is the number of choices for this step

when can you use it? the choice you make for a step does not change the number of choices for later steps

$$\text{total allowed} = \text{total possible} - \text{total not allowed}$$

addition: $n(A \text{ or } B) = n(A) + n(B) - n(AB)$

password questions: need to know what

- case-sensitive
- alphanumeric

mean (also, how many letters in alphabet)

4.2 classical probability:

$$P(E) = \frac{n(E)}{n_{\text{tot}}}$$

sample space: complete list of all outcomes

complement: $P(\bar{A}) = 1 - P(A)$

$$P(A \text{ or } B) = P(A) + P(B) - P(AB)$$

conditional probability:

$$P(B|A) = \frac{P(AB)}{P(A)}$$

↑
B if A

independent vs dependent variables

$$P(B|A) \stackrel{?}{=} P(B)$$

4.3 discrete random variables

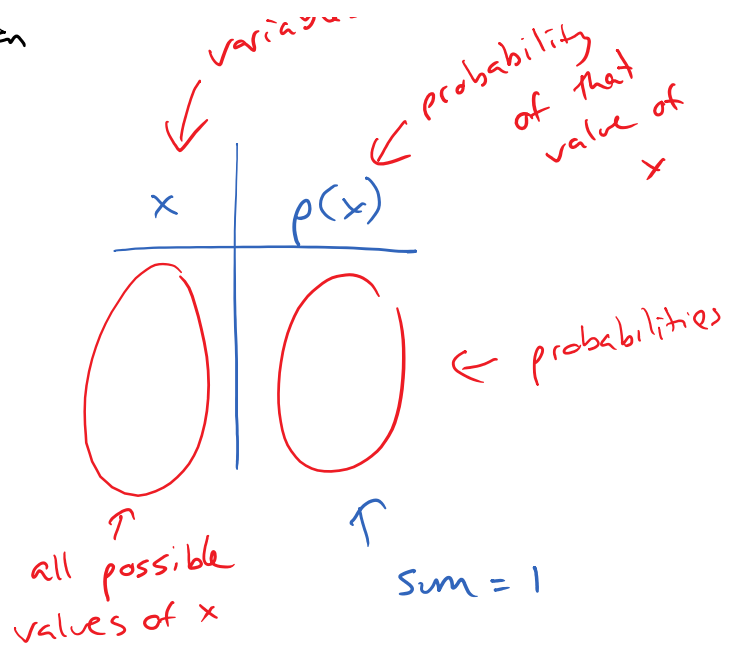
probability distribution

variables

probability
↳ that of

probability distribution

table



5.1 continuous random variables

- the area under the curve is equal to 1

5.2 - 5.4 the standard normal distribution

$$z = \frac{x - \mu}{\sigma}$$

two classes of problem:

① I give you x (and μ and σ),
you calculate z and use table
to find p

② I give you p (and μ and σ),
you find z from the table
and then use $z = \frac{x - \mu}{\sigma}$ to
calculate x

A highway safety study looked at 100 accidents and recorded the following data for the driver of the vehicle.

	I injured	\bar{I} not injured
S seat belt	6	70
\bar{S} no seat belt	8	16

a) complete the table

sum must be 100

b) are "being injured" and wearing a "seat belt" independent?

$$P(I) = \frac{n(I)}{n_{\text{tot}}} = \frac{14}{100} = 14\%$$

$$P(I | S) = \frac{n(IS)}{n(S)} = \frac{6}{76} = 7.89\%$$

if same, independent
different, dependent