Stats 200 Winter 2018

Intake quiz

We are interested in assessing the level of the class prior knowledge in probability. This short quiz is anonymous: your performance does not influence your grade. However, please try to answer the questions as best as you can. You will find solutions to these problems online and you can use them to self-assess your readiness for the class.

1. **Draw Venn diagrams corresponding to mutually exclusive events** $A$ and $B$

   ![Venn Diagram](image)

   See also: Rice Section 1.2

2. **For two generic events** $A$ and $B$, **write an expression for** $P(A \cup B)$

   \[ P(A \cup B) = P(A) + P(B) - P(A \cap B) \]

   See also: Rice Section 1.3

3. **If** $X$ and $Y$ **are two independent random variables with cumulative distribution functions** $F_X(t)$ **and** $F_Y(s)$ **their joint cumulative distribution function** $F_{X,Y}(t, s)$ **is equal to...**

   \[ F_{X,Y}(t, s) = F_X(t) \cdot F_Y(s) \]

   See also: Rice Section 2.3

4. **The expected value** $E(X)$ **of a random variable** $X$ **with density function** $f(x)$ **is...**

   \[ E(X) = \int_{-\infty}^{\infty} x f(x) dx \]

   See also: Rice Section 4.1
5. The variance of a random variable $X$ is defined as...

$$Var(X) = E[(X - E(X))^2]$$

See also: Rice Section 4.2

6. Indicate what is the most advanced probability class you took and when