Stat 2605 Tutorial 2

September 27, 2022

1. Two different numbers are selected at random from the 10 integers: 1, 2, ..., 10. What is the probability of the event E of getting an even sum?

2. An urn contains three red balls and two white balls. Each time a ball is randomly selected and taken out without replacement, two balls of the opposite color are put back into the urn. Find the probability of the event A that the person takes out a red ball first and a white ball next.

3. Suppose that A_1, A_2, and A_3 are independent events with $\mathbf{P}(A_1) = 0.2$, $\mathbf{P}(A_2) = 0.4$, and $\mathbf{P}(A_3) = 0.7$. Find $\mathbf{P}(A_1 \cap A_2^c \cap A_3^c)$.

4. (a) A box contains four white balls and six red balls. Four balls are selected at random with replacement. Find the probability of getting two white and two red balls.

   (b) How does the answer to (a) change if the balls are drawn without replacement?

5. A box contains four good items and three defective items. Three items are selected at random without replacement. Let X be the number of good items. Find the pmf and cdf of X.