

Homework 1

8/29/22

Homework 1 is due 9/6/2022 at 11:59 PM. Submit your homework on Canvas as one PDF document.

The PDF version of this assignment can be found [here](#).

1. $X \sim Bin(n, p)$, show the variance of Binomial distribution to be $np(1 - p)$.
2. $X \sim Pois(\lambda)$, show the variance of a Poisson distribution to be λ .
3. $X \sim Unif(a, b)$, show the variance is a $\frac{(b-a)^2}{12}$.
4. $X \sim N(\mu, \sigma^2)$, show the variance to be σ^2 .
5. Prove one of the following:
 1. $X \sim Gamma(\alpha, \beta)$, find the $E(X)$.
 2. $X \sim Beta(\alpha, \beta)$, find the $E(X)$
6. Find a distribution where the expected value does not exist.