MA 2631 Conference 4

September 22, 2021

1. Consider the random variable X with the probability mass distribution

$$\mathbb{P}[X = -1] = 0.3, \qquad \mathbb{P}[X = 2] = 0.5, \qquad \mathbb{P}[X = 5] = 0.1, \qquad \mathbb{P}[X = 10] = 0.1.$$

   Calculate the expected value and variance of X as well as the expectation of Y with $Y = e^X$.

2. Let X be a Poisson distributed random variable with parameter $\lambda = 2$.

   a) Calculate

$$\mathbb{P}\left[X \geq 2 \,|\, X \geq 1\right].$$

   b) Calculate

$$E\left[\frac{1}{X+1}\right].$$

3. Let Y be a Poisson distributed random variable with parameter λ, where λ is a non-negative integer. Calculate

$$E\left[\,|Y - \lambda|\,\right].$$