

Problem Set 5
(Lecture 9 & Lecture 10)
Due: 10/2

*****Question numbers and pages based on 7th Edition, please make sure you check and do the proper questions if using a different version*****

1. Textbook Exercise 3.119
2. Prove that if the random variable X follows a Poisson distribution, then this implies equidispersion (i.e. $E[X] = V[X]$). (hint: since we already proved that $E[X] = \lambda$ in class, we just need to show that $V[X] = \lambda$).
3. Suppose that the random variable Z has a Poisson distribution, such that $P(z = 4) = P(z = 6)$. Find the probability that Z is at most 1.
4. Consider the random variable $X \sim \text{Poisson}(\lambda)$. Derive the moment generating function of X .
5. Textbook Exercise 3.153
6. Textbook Exercise 3.156