

MA3 – WEEK 3

TA: WANYING (KATE) HUANG

1. EXAMPLES

Example 1.1. Let n be a positive integer, and let X be a random variable which is uniformly distributed among the numbers $\{0, 1, 2, \dots, 2n\}$. Compute $\mathbb{E}(X)$ and $Var(X)$.

Example 1.2. Let $X \sim Poisson(\lambda)$ for some $\lambda > 0$. For any given $t \in \mathbb{R}$, compute the moment generating function of X , $\mathbb{E}[e^{tX}]$.

Example 1.3. Suppose a coin turns heads with probability $p \in (0, 1)$. What is the expected number of coin flips until we first get heads.

Example 1.4. If a typist averages one misspelling in every 3250 words, what are the chances that a 6000-word report is free of all such errors? (try both Binomial analysis and Poisson approximation)