

Problem 1 (10 Points) Show that the sequence of Binomial random variables converges weakly in distribution to a Poisson random variable as $n \rightarrow \infty$, and $a = np$.

Problem 2 (10 Points) Show, with details, how a discrete random walk in one dimension leads to, in the limit, a normal random variable.

Problem 3 (10 Points) State and derive the Central Limit Theorem.