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Math E-156

Week 3 Proof of the Week

Given the sum of n independent Bernoulli random variables, each with parameter p

$$E[Y] = \sum E[X_i] = np$$

Where $E[X_i] = (1-p) * 0 + p * 1 = p$

$$Var[Y] = \sum_{i=1}^{n} Var[X_i] = np(1-p)$$

Where $E[X_i^2] = (1-p) * 0 + p * 1^2 = p$ and

$Var[X_i] = E[X_i^2] - E[X_i]^2 = p - p^2 = p(1-p)$

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