IST557 Homework 1

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today

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1 Problem 1: Expected value of a sum of normal random variables

We are given: $y \sim \mathcal{N}(\mu, \sigma^2)$ and $y \in \mathbb{R}$ To solve the expectation $E[y_1 + y_2 + y_3 + ...y_N]$ given $N \in \mathbb{R}$, we can use the linearity of expectation:

\[E[y_1+y_2+y_3+ ... y_N] = E[y_1] + E[y_2] + E[y_3] + ... E[y_N]]

Given that y is a Gaussian random variable with mean μ, this expectation solves to be $N * \mu$