



PES University, Bangalore

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UE19CS203 – STATISTICS FOR DATA SCIENCE

Unit-2 - Random Variables

QUESTION BANK

Chebyshev's inequality

Exercises for Section 4.5

[Text Book Exercise – Section 4.5 – Q. No. [26] – Pg. No. [256]]

1. Chebyshev's inequality (Section 2.4) states that for any random variable X with mean μ and variance σ^2 , and for any positive number k , $P(|X - \mu| \geq k\sigma) \leq 1/k^2$. Let $X \sim N(\mu, \sigma^2)$. Compute $P(|X - \mu| \geq k\sigma)$ for the values $k = 1, 2$, and 3 . Are the actual probabilities close to the Chebyshev bound of $1/k^2$, or are they much smaller?