Stat 134: Section 17

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Conceptual Review

a. What is p.d.f of the normal $(0, 1)$ distribution? Use the change of variable formula to also find p.d.f of normal (μ, σ^2) distribution.

b. If X and Y are independent with normal (λ, σ^2) and normal (μ, τ^2) distributions, then what distribution does $aX + bY$ follow?

Problem 1

Let X and Y be independent and normally distributed, X with mean 0 and variance 1, Y with mean 1. Suppose $P(X > Y) = 1/3$. Find the variance of Y.

Problem 2

Let Z be normal $(0,1)$ random variable. Let $X = Z^2$, use change of variable formula to calculate the distribution of X. Is that the distribution we already know?

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