MTH 372: Quiz III

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Instructions

- Show all your work to score full marks.
- Show results in their simplest forms.

1. (5 points) Let $X_1, \ldots, X_n$ be i.i.d. from $N(\mu, \sigma^2)$ where μ is unknown and σ is known. Find a pivot quantity based on the random sample, and then use the pivot quantity to set up a two-sided $(1-\alpha)$ confidence interval for μ. The hypothesis $H_0 : \mu = \mu_0$ versus $H_1 : \mu \neq \mu_0$ could be considered.

2. (2 points) Let X_i be independent Binomial$(n_i, p), i = 1, \ldots, k$. Let $U = \sum_{i=1}^{k} X_i$, find the distribution of U.