# Homework set #13

Based on lectures 24 – 25

1. Consider a system of confidence sets $C_{1-\alpha}(\mathbf{x})$ satisfying: for all $\alpha \in (0,1)$ and all $\theta \in \Theta$, $P_\theta(\theta \in C_{1-\alpha}(\mathbf{X})) = 1-\alpha$; for any $\alpha_1 > \alpha_2$ and all $\mathbf{x} \in \mathcal{X}$, $C_{1-\alpha_1}(\mathbf{x}) \subset C_{1-\alpha_2}(\mathbf{x})$. Prove or disprove: there exist a pivot $Q(\mathbf{X}, \theta)$ so that these confidence sets can be obtained by depivoting it. (When two confidence sets differ on a set of measure 0 we will call them the same.)

2. From the book 9.9, 9.10, 9.12, 9.13, 9.21.