1. Fergusan, Chapter 10, Problem 1.

2. Fergusan, Chapter 11, Problem 1.

3. Fergusan, Chapter 13, Problem 1.

4. Fergusan, Chapter 13, Problem 3.

5. Fergusan, Chapter 13, Problem 4.

6. Fergusan, Chapter 13, Problem 5.

7. Let $X_1, \ldots, X_n$ be a sample from $N(\theta, \sigma^2)$ with $\sigma^2$ known. It is desired to estimate the $p$th quantile, $x_p = \theta + \sigma z_p$, where $z_p$ is the $p$th quantile of the standard normal distribution. The maximum likelihood estimate of $x_p$ is clearly $\hat{x}_p = \bar{X}_n + \sigma z_p$. What is the asymptotic distribution of $\sqrt{n}(\hat{x}_p - x_p)$? What is the asymptotic efficiency of $X_{(np)}$ relative to $\hat{x}_p$?