18.443. Pset 3.

(1) Compute Fisher information $I(\lambda)$ for a random variable with Poisson distribution $\Pi(\lambda)$.

(2) Compute Fisher information $I(\alpha)$ for a random variable with normal distribution $N(\alpha, \sigma^2)$, assuming that $\sigma^2$ is a known constant (this means that $\alpha$ is the only parameter of the distribution).

(3) Show that Bernoulli distribution $B(p)$ is an exponential-type distribution. Using this fact, find an efficient estimate of $p$.

(4) Show that normal distribution $N(\alpha, \sigma^2)$ with given $\sigma^2$ (this means you can assume that $\sigma^2$ is a known constant, and $\alpha$ is the only parameter of the distribution) is an exponential-type distribution. Using this fact, find an efficient estimate of $\alpha$. 