Final Homework

Problem 1. Suppose that (X_1, \ldots, X_n) is a random sample from a distribution with PDF f and $\mathcal{F}_0 = \{f_\theta : \theta \in \Theta\}$ is a parametric family of PDFs.

(a) Propose a test for testing

$$H_0: f \in \mathcal{F}_0$$
 versus $H_1: f \notin \mathcal{F}_0$.

Write down a function in R to perform the proposed test. The function input should include the sample and a way to specify the parametric family \mathcal{F}_0 , and the function output should be the *p*-value of the test.

(b) Design simulation experiments to investigate the Type I error probability and the power of the proposed test. Include the R codes for carrying out the experiments and report your findings.