

Homework 2

STAT675 & GS10103

1. Under a Bayesian hypothesis testing setup, let $\pi_i = Pr(H_{0i} \text{ is true} | \text{data})$ be the posterior probability of the i th null hypothesis being true, $i = 1, \dots, m$. Suppose the H_{0i} is rejected if $\pi_i < \pi^*$ for a given value of π^* . Show that the posterior expected number of false discoveries

$$FD(\pi^*) = \sum_{i=1}^m \pi_i I(\pi_i < \pi^*).$$