

155. Consider testing

$$H_0 : p \leq \frac{1}{3} \quad \text{versus} \quad H_1 : p > \frac{1}{3},$$

where $X \sim \text{binomial}(5, p)$ using the 0-1 loss. Use R to graph and compare the risk functions for the following two tests. Based on their risk functions, which test is preferred?

- (a) Test 1 rejects H_0 if $X = 0$ or 1.
- (b) Test 2 rejects H_0 if $X = 4$ or 5.