Exercise 6. Continue with the importance sampling problem in Exercises 4 and 5. Here, the task is to obtain a sample from the target density by using the SIR (sampling-importance-resampling) method described in Section 4.5.3. Use the method with both the weights from Exercise 4 & 5 (these are normalized into resampling probabilities $p_1, ..., p_n$) over the earlier considered range of sample sizes. Investigate the behavior of the obtained empirical distribution of X by comparing the histograms with the true underlying density curve.