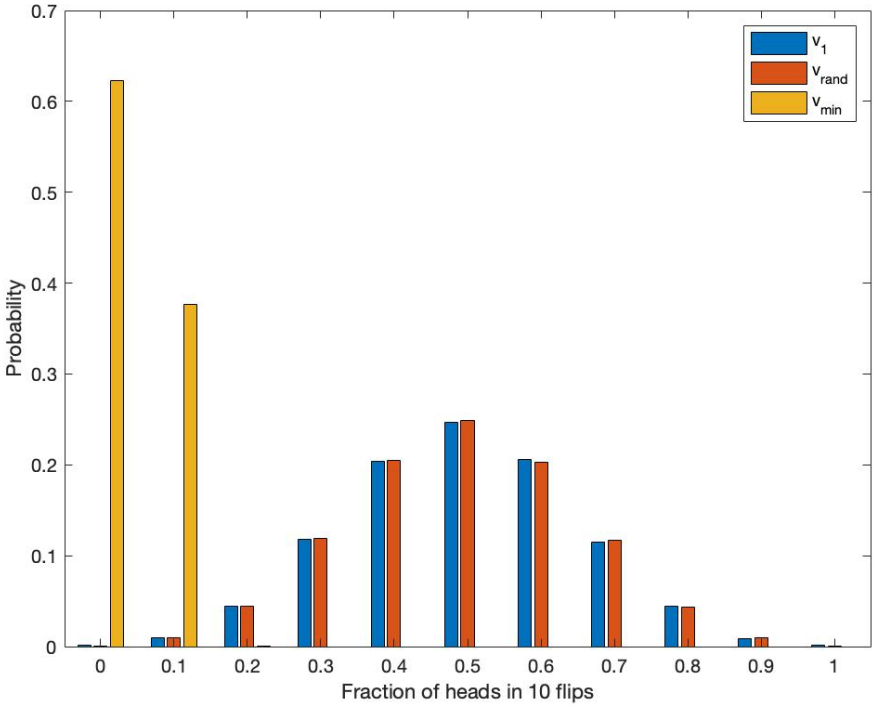
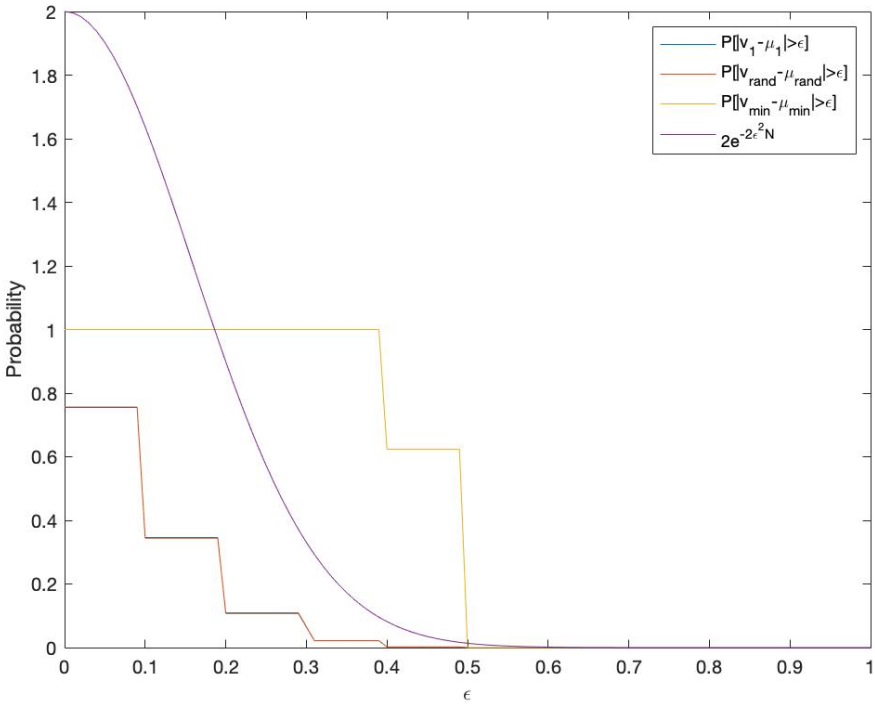
Learning From Data Exercise 1.10

For μ_{min}, μ_1 and μ_{rand}, since all the three coins are fair coins, $\mu_1 = \mu_{rand} = \mu_{min} = 0.5$

Histogram of the distributions of v_1, v_{rand}, v_{min}



Estimates for $P[|v - \mu| > \epsilon]$ as a function of ϵ, with Hoeffding bound $2e^{-2\epsilon^2 N}$



c_1 and c_{rand} obey the Hoeffding bound, and c_{min} does not obey the Hoeffding bound. As illustrated in the graph above, c_1 and c_{rand} are under the curve of Hoeffding bound and c_{min} is above it. For c_1 and c_{rand}, the hypothesis is fixed, or in other words, pre-selected before the data set is generated. Therefore, they obey the Hoeffding bound. For c_{min}, it is determined after the data is seen, or in other words, selected depending on the data. Therefore, c_{min} does not obey the Hoeffding bound.