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a) $\hat{\theta}_{ML} = \frac{k}{n}$

b) $P(|\theta - \hat{\theta}_{ML}| \geq \delta) = 1 - \left[\binom{n}{k}\theta^k(1-\theta)^{n-k} - \binom{n}{k}(1-\theta)^k\theta^{n-k}\right]$

c) $P(|\theta - \hat{\theta}_{ML}| \geq \delta) \leq 2e^{-2\delta^2 n}$

d)