Revised 205B question, September 2014 FYE
re-take exam: Solutions

(a) The first part is true, because boundary mis-behavior can't occur when the parameter space has no boundaries; when such boundaries exist (e.g., when a parameter is strictly positive) unbiased estimators can easily be absurd (e.g., by taking on negative values). Without boundary mis-behavior, unbiased estimators can indeed provide reasonably good estimates; an example is the sample mean in the IID Gaussian model with unknown mean and variance.

(b) Both the first and second parts of this statement are true. The first part has strong implications for inference, in that it explains why and when Bayesian and frequentist inferential answers will be similar; the second part is unfortunate but true, because the theorem is silent on the rate at which the frequentist $p(\hat{\theta}|\theta\,\mathcal{B})$ and the Bayesian $p(\theta|\hat{\theta}\,\mathcal{B})$ both approach normality.

(c) All three parts of this statement are false: MoM estimators are often (much) less efficient than ML estimators; MoM estimators often do in fact have closed-form expressions; and there are many settings in which ML estimators have to be solved for iteratively rather than possessing explicit formulas.

(d) Both (1) and (2) are true, and (2) has strong implications for inference, in that it implies that uncertainty about a real-valued parameter decreases, as n increases, at a $\frac{1}{\sqrt{n}}$ rate.