Homework Solutions
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Exercise 7

(a) The sample size is $n = 200$. We do not know p, but our best estimate of p in this case is $\hat{p}$, which is $\frac{110}{200} = 0.55$. So we find $np \approx (200)(0.55) = 110 > 5$ and $n(1-p) \approx (200)(0.45) = 90 > 5$. The sample size is large enough. Even if the estimate is off a bit, it is ok because 110 and 90 are *much* larger than 5.

(b) The sample size is $n = 20$ and we should the value of p given in H_0, which is 0.50. So $np = (20)(0.50) = 10 > 5$ and $n(1-p) = (20)(0.50) = 10 > 5$, so the sample size is large enough.

(c) The sample size is $n = 1000$, but our only estimate of p is 0.002. So $np \approx (1000)(0.002) = 2 < 5$, so the sample size is too small.