7.55

A random sample of size $n = 196$ yielded $\hat{p} = .64$.

a. Is the sample size large enough to use the large sample approximation to construct a confidence interval for p? Explain.
b. Construct a 95% confidence interval for p.
c. Interpret the 95% confidence interval.

b. $CI_{95\%}(p) = \left(\hat{p} \mp z_{0.025}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}\right) = \left(0.64 \mp 1.96\sqrt{\frac{0.64(1-0.64)}{196}}\right)$

$z_{0.025} = 1.96$

$= (0.64 \mp 0.07) = (0.57, 0.71)$

c. With a 95% confidence the true value of p lies between .57 and .71.

a. Yes. The sample size just has to be ≥ 20 for the large sample approximation to be valid.