Name:

Quiz 3, Attempt 1

Find an approximate 80% lower confidence limit for p^2, where p is the proportion of statisticians who love Brandon Sanderson books. The outcome of the sample mean is 0.5 from a sample of size 8.

$$0.80 \approx P\left(z_{.20} < \frac{-\hat{P} + p}{\sqrt{\frac{\hat{P}(1-\hat{P})}{8}}} \right)$$

$$= P\left(\hat{P} + z_{.20}\sqrt{\frac{\hat{P}(1-\hat{P})}{8}} < p \right).$$

An approximate 80% lower confindence bound for p is:

$$\frac{1}{2} + z_{.20}\sqrt{\frac{\frac{1}{2}\left(1-\frac{1}{2}\right)}{8}}$$

and for p^2 is

$$\boxed{\left(\frac{1}{2} + z_{.20}\sqrt{\frac{1}{32}} \right)^2}$$