

4. $X=50$, $n=200$, 95% CONFID.

CONFID. INTERVAL FOR POP. PROP. (BY HAND)

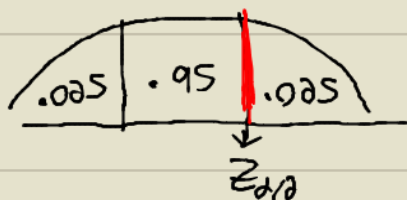
① FIND n

$$n=200$$

② FIND \hat{p}

$$\hat{p} = \frac{X}{n} = \frac{50}{200} = 0.25$$

③ FIND $Z_{\alpha/2}$



AREA TO LEFT IS 0.975
SO

$$Z_{\alpha/2} = 1.96$$

④ PLUG INTO FORMULAS

$$\begin{aligned} LB &= \hat{p} - Z_{\alpha/2} \cdot \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \\ &= 0.25 - 1.96 \sqrt{\frac{0.25(1-0.25)}{200}} \end{aligned}$$

$$LB = 0.1900$$

$$\begin{aligned} UB &= \hat{p} + Z_{\alpha/2} \cdot \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \\ &= 0.25 + 1.96 \sqrt{\frac{0.25(1-0.25)}{200}} \end{aligned}$$

$$= 0.3100$$

(.19, .31)