Hypotheses about P (%)

P. 1) DMV claims that more than 65 % of applicants for driving tests pass the very first time. To test this claim if out of a sample of 250 applicants only 164 passed the driving test. Is DMV's claim valid? $\alpha = 0.05$,

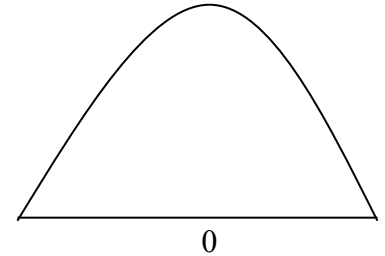*SC*:   Ho: $n =$ $x =$ $\hat{p} = \dfrac{}{250} =$

OC: $H_{1:}$

Test Statistic: _____

Conclusion: Accept or reject H_0?

Comment: Accept or reject **SC**?

P. 2) DMV claims that 65% of applicants for driving tests pass the very first time. To test this claim with $\alpha = 0.01$, out of a sample of 400 applicants 280 passed the driving test. Is DMV's claim valid?

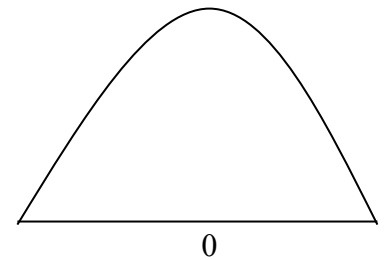*SC*:   Ho: $n =$ $x =$ $\hat{p} = \dfrac{}{400} =$

OC: $H_{1:}$

Test Statistic: _____

Conclusion: Accept or reject H_0?

Comment: Accept or reject **SC**?

P. 3) In a pre election sampling research 468 did vote for the republican candidate for governor and 532 did not. Is there sufficient evidence to suggest that the republican candidate will lose the election (getting less than 50% of the vote) at the .025 level?
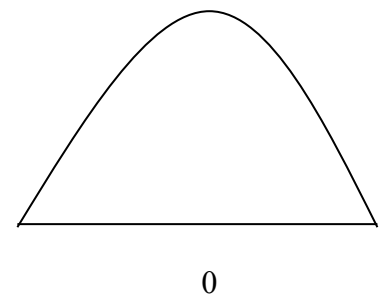
SC: Ho: $n =$ $x =$ $\hat{p} = \dfrac{}{}$

OC: $H_{1:}$

Test Statistic $= ts =$ _____

Conclusion: Accept or reject H_0?

Comment: Accept or reject **SC**?

P. 1)

SC: $P > 0.65$ Ho: $P \le 0.65$ $n =$ $x =$ $\hat{p} = \dfrac{164}{250} = 0.656$

OC: $P \le 0.65$ H$_1$: $P > 0.65$

Test Statistic $= Z = \dfrac{\hat{p} - p}{\sqrt{\dfrac{p(1-p)}{n}}} = \dfrac{.656 - .65}{\sqrt{\dfrac{.65(1-.65)}{250}}} = \dfrac{.006}{.0302} = 0.199$ ***Falls not inside CR***
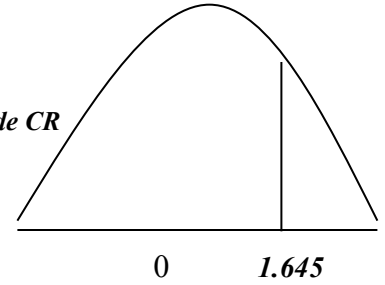
Conclusion: Accept H$_0$?

Comment: **Reject SC?**   **P-value $= 0.4211 > \alpha$**
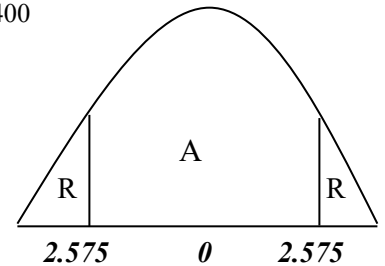

P. 2)

SC: $P = 0.65$ Ho: $P = 0.65$ $n = 400$ $x = 280$ $\hat{p} = \dfrac{280}{400} = 0.7$

OC: $P \ne 0.65$ H$_1$: $P \ne 0.65$

CV $= z = \pm\, 2.575$

TS: $Z = \dfrac{\hat{p} - p}{\sqrt{\dfrac{p(1-p)}{n}}} = \dfrac{0.70 - .65}{\sqrt{\dfrac{.65(1-.65)}{400}}} = \dfrac{.05}{.0238} = 2.10 \Rightarrow$ ***Falls not inside CR***

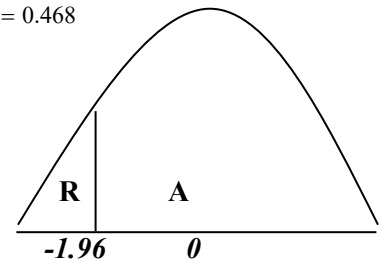**Conclusion**: Accept Ho   **Comment**: DMV's claim is true   **P-value $= 0.0360 > \alpha$**

P. 3)

SC: $P < 0.50$ Ho: $P \ge 0.50$ $n = 1000$ $x = 468$ $\hat{p} = 468 / 1000 = 0.468$
OC: $P \ge 0.50$ H$_1$: $P < 0.50$

CV $= z = 1.96$

TS: $Z = \dfrac{\hat{p} - p}{\sqrt{\dfrac{p(1-p)}{n}}} = \dfrac{0.468 - 0.50}{\sqrt{\dfrac{.50(1-.50)}{1000}}} = \dfrac{-0.032}{.01581} = -2.02 \Rightarrow$ ***It falls inside CR***

Conclusion: Reject Ho   **Comment**: Yes, the candidate will lose the election.

P-value $= 0.0215 < \alpha$ $> \alpha$