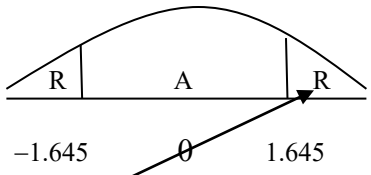
Problem 1.
At $\alpha = .10$, Test that **60%** of stat students pass the course, knowing that in a sample of 400 students only 260 passed the course.

SC: $\mathbf{P} = 0.60$. $\mathbf{H_0}: \mathbf{P} = 0.60$
OC: $\mathbf{P} \neq 0.60$ $\mathbf{H_1}: \mathbf{P} \neq 0.60$



$\alpha = .10$ n = 400, 2-tailed test
Critical value = CV = **Z =** ± 1.645

Sample proportion = $\hat{p} = \frac{260}{400} = 0.65$

Test Statistics $= z = \frac{\hat{p} - p}{\sqrt{\frac{p(1-p)}{n}}} = \frac{0.65 - 0.60}{\sqrt{\frac{0.6(1-0.60)}{400}}} = 2.04$

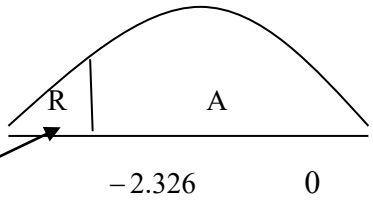
Conclusion: Accept or reject $\mathbf{H_0}$? Reject $\mathbf{H_0}$ because the test statistics does not fall in the critical region.

Comment: Accept or reject **SC**? Accept SC because SC and $\mathbf{H_0}$ are the same.

P-value:0.041 **that is smaller than** $\alpha = 0.10$ **that means that we need to** reject $\mathbf{H_0}$.
TI-83/84 *stat* → *test* → *Option 5*

Problem 2. Marketers believe that 92% of adults own a cell phone. A cell phone manufacturer believes that number is actually lower. In a sample of 200 adults, 87% own a cell phone. At the 1% significance level, determine if the proportion of adults that own a cell phone is lower than the marketers' claim..
SC: $\mathbf{P} < 0.92$ $\mathbf{H_0}: \mathbf{P} \geq 0.92$
OC: $\mathbf{P} \geq 0.92$ $\mathbf{H_1}: \mathbf{P} < 0.92$

When $\alpha = .010$, n > 30 and one –tailed test then by using bottom row of page **Table 2.**
Critical value = CV = **Z =** -2.326



Sample proportion = $\hat{p} = ? = 0.87$

Test Statistics $= z = \frac{\hat{p} - p}{\sqrt{\frac{p(1-p)}{n}}} = z = \frac{0.87 - 0.92}{\sqrt{\frac{0.92(1-0.92)}{200}}} = -2.61$

Conclusion: Accept or reject $\mathbf{H_0}$? Reject $\mathbf{H_0}$ because the test statsics falls in critical region.

Comment: Accept or reject **SC**? Accept SC because and $\mathbf{H_0}$ and SC have different format.

P-value**:** 0.0046 **is less than** $\alpha = 0.01$**, therefore we reject Ho**

TI-83/84 *stat* → *test* → *Option 5*