SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Identify the null hypothesis, alternative hypothesis, test statistic, P–value, conclusion about the null hypothesis, and final conclusion that addresses the original claim.

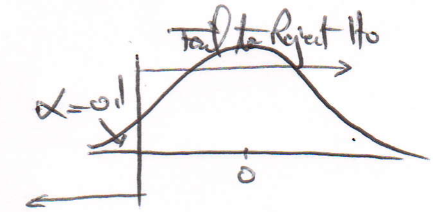
1) The health of employees is monitored by periodically weighing them in. A sample of 54 employees has a mean weight of 183.9 lb. Assuming that σ is known to be 121.2 lb, use a 0.10 significance level to test the claim that the population mean of all such employees weights is less than 200 lb. 1) ______________

$n = 54$, $\bar{X} = 183.9$ Lb

$\sigma = 121.2$ Lb, $\alpha = 0.1$

$\Rightarrow$ Ho: $\mu = 200$ lb

Ha: $\mu < 200$ lb



$z_c = -1.282$

Reject Ho

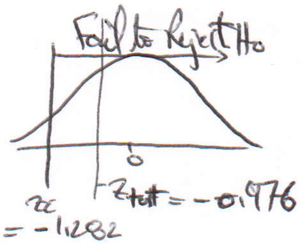
$z_c = \text{InvNorm}(0.1, 0, 1)$

$= -1.282$

$$z_{test} = \frac{(\bar{x} - \mu)}{\left(\frac{\sigma}{\sqrt{n}}\right)}$$

$$= \frac{(183.9 - 200)}{\left(\frac{121.2}{\sqrt{54}}\right)}$$

$= -.976$



Ho: $\mu = 200$ Lb

Ha: $\mu < 200$ Lb

There is not sufficient evidence to reject Ho.

Fail to Reject Ho $\Rightarrow$ Fail to support Ha

P-value = normalcdf(-1E99, -.976)

$= 0.165 > 0.1$

$= 0.165 > \alpha$

Again, fail to reject Ho

$\longrightarrow$ fail to support Ha

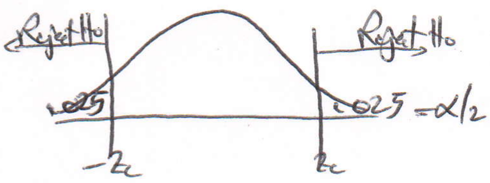
2) A random sample of 100 pumpkins is obtained and the mean circumference is found to be 40.5 cm. Assuming that the population standard deviation is known to be 1.6 cm, use a 0.05 significance level to test the claim that the mean circumference of all pumpkins is equal to 39.9 cm. 2) ______________

$n = 100$, $\bar{X} = 40.5$ Cm

$\sigma = 1.6$ Cm, $\alpha = .05$

Ho: $\mu = 39.9$ Cm

Ha: $\mu \neq 39.9$ Cm



$-z_c = \text{InvNorm}(.025, 0, 1)$

$= -1.96$

$z_c = 1.96$

$$z_{test} = \frac{(\bar{x} - \mu)}{\left(\frac{\sigma}{\sqrt{n}}\right)}$$

$$= \frac{(40.5 - 39.9)}{\left(\frac{1.6}{\sqrt{100}}\right)}$$

$= 3.75$

$3.75 > 1.96$

There is sufficient evidence to Reject Ho

$\rightarrow$ There is sufficient evidence to support Ha.

P-value = 2normalcdf(3.75, 1E99)

= 2normalcdf(-1E99, -3.75)

$= 1.769 \times 10^{-4}$

$1.769 \times 10^{-4} < 0.05$

P-value $< \alpha$

Again strong evidence to Reject Ho

$\rightarrow$ strong evidence to Support Ha