19.34 $H_0: \mu_w = \mu_m$

$H_A: \mu_w > \mu_m$ (or $\mu_m < \mu_w$)

Women

$n_w = 18$

$df = 17$

$\bar{X}_w = 141.1$

$s_w = 26.47$
26.4

men

$n_m = 20$

$\bar{X}_m = 126.3$

$s_m = 32.15$
32.8

19.34 page 484

See page 481

$$t = \frac{\bar{X}_w - \bar{X}_m}{\sqrt{\frac{s_w^2}{18} + \frac{s_m^2}{20}}} = \frac{141.1 - 126.3}{\sqrt{\frac{26.4^2}{18} \quad \frac{32.8^2}{20}}}$$

$$= 2.056 = t \quad df = 17$$

$1.740 < 2.056 < 2.110$

$0.05 > \text{p-value} > 0.025$

Conclusion: We have enough evidence to reject H_0 null hypothesis. H_A is supported.

14.30 Student study times. A class survey in a large class for first-year college student asked, "About how many minutes do you study on a typical weeknight?" The mean response of the 269 students was $\bar{x} = 137$ minutes. Suppose that we know that the study time follows a Normal distribution with standard deviation $\sigma = 65$ minutes in the population of all first-year students at this university.

(a) Use the survey result to give a 99% confidence interval for the mean study time of all first-year students.

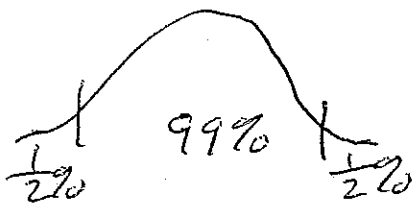
14.30 $n = 269$ $\bar{x} = 137$

$\sigma = 65$

(a) 99% CI

From Table A, use 2.575 p-value

2.57 = .9949
2.58 = .9951 ← .9950 = 2.575 area



0.005 + 0.99 + 0.005 = 1.0

$$2.575 * \frac{65}{\sqrt{269}} = 2.575 * \frac{65}{16.4}$$

$$= 10.2 = SEM$$

$$\bar{x} \pm SEM = 137 \pm 10.2$$

99% CI 126.8 to 147.2

(b) What condition not yet mentioned is needed for your confidence interval to be valid?

(b) The condition not mentioned was whether the sample was an SRS (simple random sample) of all first year college students.