Stat 205 Quiz 6

A statistics professor polled his class on how much the students pay for a hair cut. The table below has summary statistics stratified by men and women on how much they typically pay (in \$). Formula (7.1) gives df = 84.7. Construct *and intepret* a 95% confidence interval for the difference in means $\mu_f - \mu_m$ where μ_f is the average amount paid by women and μ_m is the average amount paid by men.

	Female	Male
n	65	23
\bar{y}	33.90	12.26
s	26.70	7.96

ANSWER:

- Using df = 80, I find $t_{0.025} = 1.990$.
- The standard error of the difference in the sample means is

$$\operatorname{se}(\bar{y}_1 - \bar{y}_2) = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}} = \sqrt{\frac{26.70^2}{65} + \frac{7.96^2}{23}} = 3.704$$

• The 95% CI is

$$\bar{y}_1 - \bar{y}_2 \pm t_{0.025} \operatorname{se}(\bar{y}_1 - \bar{y}_2) = 21.64 \pm 1.990(3.704) = (14.27, 29.01).$$

• With 95% confidence, on average women pay between \$14.26 and \$29.01 more than men for a haircut/style.