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STAT 3093 ASSIGNMENT #7

Q1. Ex 24, pg 506

$$CI = \bar{x} - \bar{y} \pm t_{\alpha/2,v}\sqrt{\frac{s_1^2}{m} + \frac{s_2^2}{n}}$$

$$v = \frac{\left(\frac{s_1^2}{m} + \frac{s_2^2}{n}\right)^2}{\frac{(s_1^2/m)^2}{m-1} + \frac{(s_2^2/n)^2}{n-1}} = \frac{\left(\frac{5.5^2}{28} + \frac{7.8^2}{31}\right)^2}{\frac{(5.5^2/28^2)}{28-1}\ \frac{(7.8^2/31)^2}{31-1}} = 53.95$$

round down → $v = 53$

$\alpha = 0.1$, $t_{\alpha/2,v} = 1.67$

$$CI = 91.5 - 88.3 \pm 1.67\sqrt{\frac{5.5^2}{28} + \frac{7.8^2}{31}}$$

$= (0.280, 6.12)$ For a 90% confidence interval, it suggests a difference.

For 95% CI, $\alpha = 0.05$, $t_{\alpha/2,v} = 2.01$

$CI = (-0.299, 6.70)$

no difference is suggested at CI level of 95%.