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STAT 3693, ASSIGNMENT #7

Q4: Ex 42 b, c pg 517

b) $\bar{d} = 167.21$

$s_d = 228.21$

$$t = \frac{\bar{d} - \Delta_0}{s_d/\sqrt{n}} = \frac{167.21 - 0}{228.21/\sqrt{14}} = 2.74$$

tail area = 0.9916

for 2 tailed + test ($H_a: \mu_0 \neq \Delta_0$)

$P = 2(1 - \text{tail area}) = 0.0168$

the P value indicates the null hypothesis could be rejected at $\alpha = 0.05$ but not at $\alpha = 0.01$.

c) Incorrect method

$$t = \frac{\bar{d} - \Delta_0}{\sqrt{\frac{s_1^2}{n} + \frac{s_2^2}{n}}} = \frac{167.21 - 0}{\sqrt{\frac{351.97^2}{14} + \frac{234.042^2}{14}}} = 1.48$$

$P = 2(1 - \text{tail area}) = 0.163$

If the procedure was used incorrectly we'd fail to reject null hypothesis when maybe we should have.