Homework 7

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Q1.

A: 85, 92, 88, 78, 90

B: 76, 82, 80, 70, 75

C: 95, 89, 92, 88, 96

H_0 : $\mu_a = \mu_b = \mu_c$

H_1 : μ_a, μ_b, μ_c are not equal for some a, b, or c.

$k = 3$, $n = 15$

$df_1 = k - 1 = 2$

$df_2 = n - k = 15 - 3 = 12$

$\bar{Y}_A = \frac{1}{5}(85 + 92 + 88 + 78 + 90) = 86.6$

$\bar{Y}_B = \frac{1}{5}(76 + 82 + 80 + 70 + 75) = 76.6$

$\bar{Y}_C = \frac{1}{5}(95 + 89 + 92 + 88 + 96) = 92$

$\bar{Y} = 85.07$

$SS_B = 5 \cdot (86.6 - 85.07)^2 + 5(76.6 - 85.07)^2 + 5(92 - 85.07)^2$

$= 610.54$

$SS_W = (85 - 85.07)^2 + (92 - 85.07)^2 + \cdots + (96 - 85.07)^2$

$= 866.94$

$F_c = \dfrac{\frac{610.54}{2}}{\frac{866.94}{12}} = 4.23$ $\qquad F_\alpha = 3.8853$

Since $F_c > F_\alpha$, we reject the null hypothesis and conclude that there are significant difference.