Math 343 - Lab 3

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a)

The hypothesis for the test is:
H_0: $\mu_1 = \mu_2 = \mu_3$.
H_a: At least one μ_i is different.
The test statistic $F = 7.91$.
The P-value = 0.006.
Since the P-value$< \alpha = 0.5$ we can conclude the following: There is not enough statistic evidence to support the hypothesis that $\mu_1 = \mu_2 = \mu_3$.

b)

An estimate of the overall mean μ, is given by the following:

$$\begin{aligned}\hat{\mu} &= \frac{1}{a}\sum_{i=1}^{a}\hat{\mu_i} \\ &= (13.4 + 38.2 + 73)/4 \\ &= 41.5\bar{3}\end{aligned}$$

An estimate of the variance σ^2 of the random error term ϵ_{ij} can be pulled from the pooled standard deviation in Minitab:

$$S_p^2 = 23.7978^2 = 566.335$$

c)

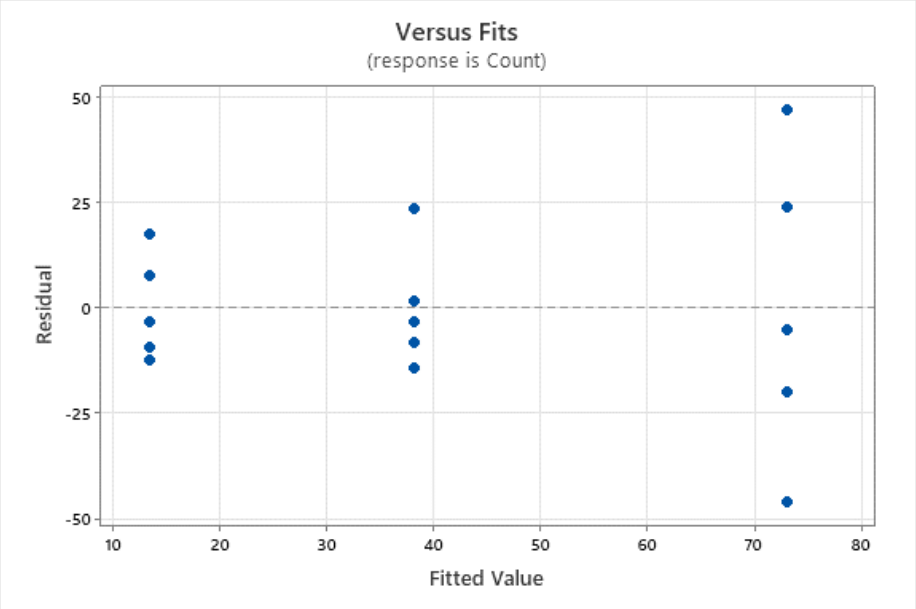

Figure 1: The residual plot from Minitab.

The residual plot seems to indicate heteroskedasticity. The data appears to have a bell like shape where data with a lower fitted value has a smaller residual spread.

d)

e)

f)

g)

h)