10. (9 pts) Three Radar modifications were tested for detection range improvement using <u>five</u> trials each. The following single factor ANOVA Table presents the results:

Source	D.F.	Sums of Squares	Mean Squares	Fs	P
Radar Modification	2	139.6	69.8	5.72	0.018
Exp. Error	12	146.4	12.2		
Total	14	286.0			

The Mod sample means are: **Mod A = 31.4,   Mod B = 28.6,   Mod C = 24.0**

Using the Fisher LSD test, determine if any of the modifications were significantly different from each other at a level of significance of α = .05, and find the upper and lower confidence limits for the difference of means. $MSE = 12.2$

$$LSD = t_{\alpha/2,\ k(n-1)}\sqrt{\frac{2MSE}{n}} = \boxed{4.8158}$$

$t_{\alpha/2,\ 3(5-1)}\sqrt{\frac{2(12.2)}{5}} =$

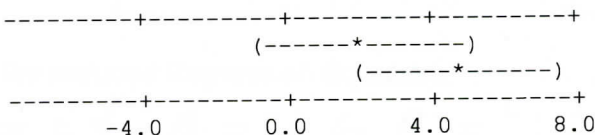$t_{0.025,\ 12}\sqrt{4.88}$

$2.18\ (2.2091) = 4.8158$

Results:

Comparison	Difference	LSD	Lower Conf. Limit.	Upper Conf. Limit	Significant or Not Significant
A – B	31.4 – 28.6 = 2.8	4.8158	-2.0158	7.6158	NS
B – C	28.6 – 24.0 = 4.6	4.8158	-0.2158	9.4158	NS
A – C	31.4 – 24.0 = 7.4	4.8158	2.5842	12.2158	Sign

∴ 0 goes through, it is not significant

11. (4 pts) The following Minitab table presents Fisher LSD 95% confidence intervals for the difference of pairs of three aircraft factor means.
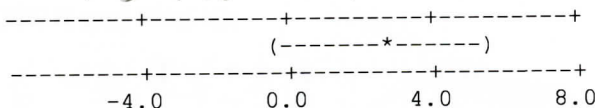
F18-F16 = 2.1   LSD = 2.919   NS

Aircraft = F16 subtracted from: F5-F16 = 4.8   LSD = 2.752   Sign.

```
Aircraft   Lower   Center   Upper   ---------+---------+---------+---------+
F18        -0.819   2.100   5.019                      (------*-------)
F5          2.048   4.800   7.552                        (------*------)
                                     ---------+---------+---------+---------+
                                        -4.0      0.0       4.0       8.0
```

Aircraft = F18 subtracted from: F5-F18 = 2.7   LSD = 2.919   NS.

```
Aircraft   Lower   Center   Upper   ---------+---------+---------+---------+
F5         -0.219   2.700   5.619                      (-------*------)
                                     ---------+---------+---------+---------+
                                        -4.0      0.0       4.0       8.0
```

a. **Circle or underline** the pairs of factor means that are significantly different from each other at a level of significance of α = .05:   **F18-F16,**   **F5-F16,**   **F5-F18**