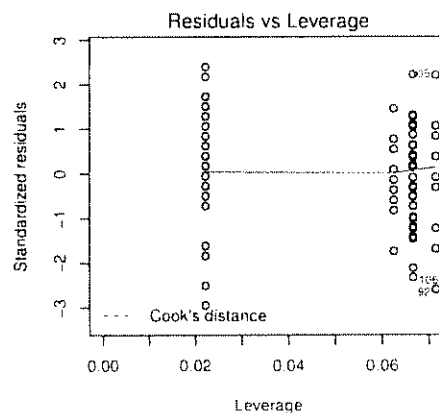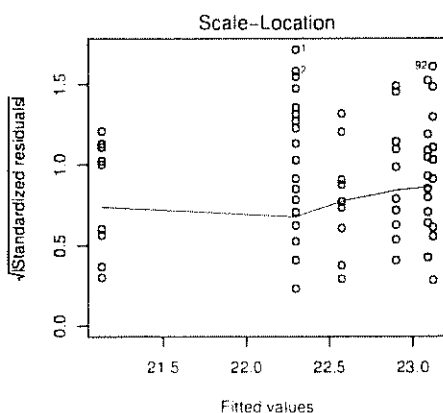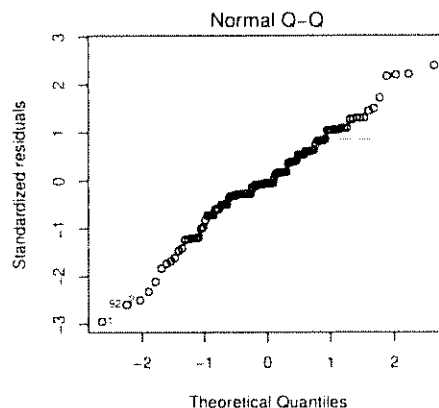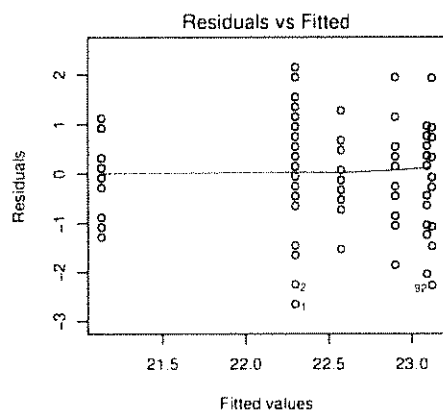# STAT 217: Quiz 9

Name: _Solutions_

Cuckoos are known to lay their eggs in the nests of other (host) birds. The eggs are then adopted and hatched by the host birds. These data were originally collected by O. M. Latter in 1902 to see how the size of a cuckoo egg is related to the species of the host bird.

```
fit.bird <- lm(cuckoo$length ~ cuckoo$species)
```

```
anova(fit.bird)
```

To investigate the assumptions, we need to look at the diagnostic plots for the ANOVA.

```
par(mfrow = c(2,2))
plot(fit.bird)
```

```
eij <- residuals(fit.bird)
```

1. Were the assumptions and conditions to run a parametric ANOVA met?

- Independence: Hard to assess with these plots. We should ask researchers about how eggs were selected.

- Equal Var: Yes - Residuals have similar spread across fitted values

- Normal Residuals: Yes - Residuals approximately follow a straight diagonal line.

- Randomization and Representative:

    Cuckoo eggs were not randomly selected from a larger population of eggs, so inference does not extend beyond those eggs sampled.

    Cuckoo eggs were not randomly assigned to host bird, so we cannot infer that the type of host bird causes the eggs to grow larger (or smaller).