Lesson 11

Ex. 2.8.1 **a) In regression model δ_1 and δ_2 are the interaction parameters. Both of them have p-value$<$0.01 so they differ from 0 significantly on given level.**
b) $\widehat{E(Y)} = 99.5$ **for L1M1 that is consistent with** $\bar{y_{11\cdot}}$**.**
$\widehat{E(Y)} = 114.0$ **for L2M2 that is consistent with** $\bar{y_{22\cdot}}$**.**
$\widehat{E(Y)} = 38.5$ **for L2M3 that is consistent with** $\bar{y_{23\cdot}}$**.**
c) Regression have $SS_E = 141.5$ **that is the same value as in complete two factor model in Ex. ??.6., which is due to the fact that two models are equivalent.**

Ex. 2.8.2 **a)** $logit \quad \hat{p} = 8 - 0.517x + 0.00637x^2$**.**
b) $I_{\beta_1}^{0.95} = (-1.249, 0.216)$ **and** $I_{\beta_2}^{0.95} = (0.00021, 0.01253)$
c) They are the same values.
d) p**-value=** $0.702 > 0.05$**. Our *small* model (logistic regression model) seems to be ok.**
e) $x = 67.70$**.**

Ex. 2.8.3 **a) They are equivalent models for additive two factors model.**
b) Plug in point estimates for parameters for each formula for p**.**
c) Compare P**-values for Deviance. Analysis no. 3.** $P = 0.203 > 0.05 \Rightarrow$ **Model in analysis no. 3 seems to be ok.**
d) $I_{\beta_1}^{0.95} = (0.4493, 0.7902)$ **and** $I_{\beta_2}^{0.95} = (-1.0422, -0.7005)$

Ex. 2.8.4 **a)** $I_{\beta_1} = (-108.1, -5.9)$**. The leakage current appears to be important because** $0 \notin I_{\beta_1}$**.** $\beta_1 < 0$ **indicate that the service life decreases as the leakage current increases.**
b) Difference between method 2 and method 1 is described by β_2**. We have** $I_{\beta_2} = (14.4, 430.2) > 0$ **Method 2 seems to be better than method 1.**
c) Difference between method 3 and method 2 is described by $\beta_3 - \beta_2$**. We have** $\hat{\beta}_3 - \hat{\beta}_2 = 240$**.**