STAT 445 Lab 10
ASSIGNMENT # 10
Due: Lab 11 (at the end)

Question 1

To assess the effects of increasing doses of a toxic substance, 1500 experimental insects were divided at random into 6 groups of 250 each. The insects in each group were independently exposed to a fixed dose of the toxic substance. Each insect was observed after one day. Following are dose levels (on a logarithmic scale) and the number of insects that died out of the 250 in each group:

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dose:    1    2    3    4    5    6
death:  28   53   93  126  172  197
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(a) Fit an appropriate model to relate the probability of insect death to dose level. State the fitted model and interpret it.

(b) What is the probability that an insect dies when the dose level is 3.5? Also evaluate an approximate 95% confidence interval for this probability.

(c) What is the estimated median lethal dose, i.e., the dose for which 50 percent of the insects are expected to die?