STA 6329 Exercise 3

1. Suppose by a sequence of elementary row operations $E_1$, $E_2$, ..., $E_n$, we can transfer a square matrix $A$ into a matrix $B$ which has a row of all zeros, i.e.,

$$E_n \cdots E_2 E_1 A = B,$$

where $B$ has a 0 row. Show that there is no way we can find another sequence of elementary row operations to transfer $A$ into the identity matrix. (Hint: Show first that elementary row operations cannot change the independence-dependence status of row vectors in the matrix it operates on.)

2. Problem 2 of Chapter 3 (p.26). Please change the word "matrix" to "vector".

3. Problem 7 of Chapter 4 (p.27).

4. Problem 9 of Chapter 4 (p.47).

R Exercises:

5. Plot the data smoking in the data set and add the regression line. Let the smoking rate be the x-axis and lung cancer rate be the y-axis. Give a title and descriptions at the two axes. (The difference in smoking and lung cancer among various professions of England in 1970-72 was one of the earliest evidences that smoking might cause lung cancer.)