3) a) False   Since $n = 1000 > 8$ and refer to question 7.

b) True   but the statement can be made stronger by saying BIC will always selects models with atmost the same number of parameters as AIC.

c) False   Since B) is true.

4)   a) TRUE ,   Refer to Example(a) below

b) False   Since $\log n > 5$ thus BIC will always pick models with less parameters.

c) False   Refer to Example 1) below

d) False   Refer to Example 2) below.

	none	A
RSS	2	1

model with less

Example 1) $n = 3$, $\hat{\sigma}^2 = 1$ → AIC picks ~~less then~~ parameters then BIC.

Example 2) $n = 7$, $\hat{\sigma}^2 = \frac{1}{3}$ → AIC model same as BIC model.   = {A}

Q2 a) $RSS(C) = x$

$1.5 = RSS(A,C) \leq RSS(C) \leq RSS(None) = 7$

$3 = RSS(B,C) \leq RSS(C) \leq RSS(None) = 7$

$\Rightarrow RSS(C) \in [3,7]$

b) $RSS(A,B) = z$

$1 = RSS(A,B,C) \leq RSS(A,B) \leq RSS(A) = 6$

$1 = RSS(A,B,C) \leq RSS(A,B) \leq RSS(B) = 4$

$\Rightarrow$ ~~$RSS(A,B) \in$~~

$RSS(A,B) \in (1,4)$