## EXERCISES OF CHAPTER 2

Question 1. Suppose that $A$ is an $m \times n$ matrix and $A X=b$ has infinitely many solutions. Which of the following statement must be true?

1. $m \leq n$
2. $n \leq m$
3. $\operatorname{rank} A=n$
4. $\operatorname{rank} A<n$

Question 2. Find all value(s) of $a$ for which $A X=0$ has non-trivial solution, where

$$
A=\left[\begin{array}{lll}
0 & 1 & 2 \\
2 & 1 & 1 \\
1 & a & 2
\end{array}\right]
$$

