

EXERCISES OF SECTIONS 2.5, 2.6

Question 1. For what value(s) of k does

$$\begin{bmatrix} 1 & 1 & 3 & \vdots & 0 \\ 2 & 4 & 5 & \vdots & 0 \\ 1 & -1 & k^2 & \vdots & 0 \end{bmatrix}$$

have infinitely many solutions?

Question 2. $A_{m \times n}X = b$ has infinitely many solutions. Which of the following statement must be true?

- A. $m \leq n$
- B. $n \leq m$
- C. $\text{rank}(A) = n$
- D. $\text{rank}(A) < n$

When $A_{m \times n}X = b$ has a unique solutions, which of these statement must be true?

Question 3. Is

$$\begin{bmatrix} 1 & -2 & 4 & \vdots & a \\ -1 & 1 & -3 & \vdots & b \\ 4 & 3 & 5 & \vdots & c \end{bmatrix}$$

consistent for all a, b, c ?