

- [illegible]

12. a) $A = \begin{bmatrix} 2 & -2 & 4 \\ 5 & -4 & 7 \\ 3 & -2 & 3 \\ 1 & -1 & 2 \end{bmatrix}$

b) non injective, non surjective, non bijective

c) $\begin{bmatrix} x \\ y \\ z \end{bmatrix} = t \begin{bmatrix} 1 \\ 3 \\ 1 \end{bmatrix}$ avec $t \in \mathbb{R}$

13. a) $A = \begin{bmatrix} 2 & -2 & 4 \\ 5 & -4 & 7 \\ 3 & -2 & 4 \\ 1 & -1 & 2 \end{bmatrix}$

b) injective, non surjective, non bijective

c) $\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$

14. a) $n \geq m$

b) $n \leq m$

c) $n = m$