

Math 250

Name (Print): _____

Fall 2013

Quiz 2

1. (5 pts) A $m \times n$ matrix A is given. Determine whether the equation $A\mathbf{x} = \mathbf{b}$ is consistent for every \mathbf{b} in \mathcal{R}^m .

$$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 6 \end{bmatrix}$$

Answer: The REF form of A is

$$\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & 0 \end{bmatrix}$$

so the equation $Ax = b$ is always consistent.

2. (5pts) Determine, if possible, a value of r for which the given set is linearly dependent.

$$\left\{ \begin{bmatrix} 1 \\ -1 \end{bmatrix}, \begin{bmatrix} -3 \\ 3 \end{bmatrix}, \begin{bmatrix} 4 \\ r \end{bmatrix} \right\}$$

Answer: Since

$$\begin{bmatrix} -3 \\ 3 \end{bmatrix} = -3 \begin{bmatrix} 1 \\ -1 \end{bmatrix},$$

the set is **always** linearly dependent. So **any** value of r would work. I note that a lot the answers gave $r = -4$. Since the question ask for a value of r , this answer is correct. But please note that if the question asks for all value of r then $r = -4$ is insufficient.