Quiz 2

- 1. Which of the following functions f are linear? Circle your answer. If the function is linear, write the matrix A such that $f(\vec{x}) = A\vec{x}$.
 - Let $\vec{p} = \begin{bmatrix} 5\\4 \end{bmatrix}$. Define $f : \mathbb{R}^2 \to \mathbb{R}^2$ by $f(\vec{x}) = \vec{x} + \vec{p}$.
 - Not Linear $A = \begin{bmatrix} ----- \\ ----- \end{bmatrix}$ Linear • Define $f : \mathbb{R}^2 \to \mathbb{R}^2$ by $f\left(\begin{bmatrix} a \\ b \end{bmatrix}\right) = \begin{bmatrix} a-2b \\ -3a-b \end{bmatrix}$.

Linear

• Let $f: \mathbb{R}^2 \to \mathbb{R}^2$ rotate each vector by 180° counterclockwise.

Linear	Not Linear	A =

• Let $f : \mathbb{R}^3 \to \mathbb{R}^2$ be defined by

$$f\left(\begin{bmatrix}a\\b\\c\end{bmatrix}\right) = \begin{bmatrix}ab\\a+b\end{bmatrix}$$

Linear

Not Linear

2. Is the set of vectors

$$\left\{ \begin{bmatrix} 1\\3\\3\\-1 \end{bmatrix} \begin{bmatrix} -1\\-6\\0\\0 \end{bmatrix} \begin{bmatrix} 0\\-5\\-2\\-8 \end{bmatrix} \right\}$$

linearly independent?

Yes

No

Γ

Not Linear A = _____



Score: