

MA 262 Section 596/597 Quiz 7

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Problem 1. Write your name, quiz number, and section number at the top of a blank full sized sheet of paper.

Problem 2. Which of the following form a basis for \mathbb{R}^3 . Justify each answer.

(a)

$$\left\{ \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 3 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 0 \\ 2 \end{pmatrix} \right\}$$

(b)

$$\left\{ \begin{pmatrix} 7 \\ 0 \\ 2 \end{pmatrix}, \begin{pmatrix} 8 \\ -3 \\ 1 \end{pmatrix}, \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ 1 \end{pmatrix} \right\}$$

(c)

$$\left\{ \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ 3 \end{pmatrix} \right\}$$

Problem 3. Find a basis for the plane

$$x - 6y + 3z = 0$$

in \mathbb{R}^3 .

Problem 4. *Bonus* What is the definition of a basis?