MA322-007 Mar 3 Quiz

HW#4. Is the following a subspace? Show the subspace check.  $W = \{(x, y) : 3x + 2y = 5\} \subseteq \mathbb{R}^2$ 

HW#4' Is the following a subspace? Show the subspace check.  $W = \{(x, y) : 3x + 2y = 0\} \subseteq \mathbb{R}^2$ 

HW#5 Is the following a subspace? Show the subspace check.  $W = \{t \mapsto at^2 : a \in \mathbb{R}\} \subseteq \mathbb{R}^{\mathbb{R}}$ 

HW#6 Is the following a subspace? Show the subspace check.  $W = \{t \mapsto t^2 + a : a \in \mathbb{R}\} \subseteq \mathbb{R}^{\mathbb{R}}$ 

HW#13 Let 
$$\vec{\mathbf{v}}_1 = \begin{bmatrix} 1\\0\\-1 \end{bmatrix}$$
,  $\vec{\mathbf{v}}_2 = \begin{bmatrix} 2\\1\\3 \end{bmatrix}$ ,  $\vec{\mathbf{v}}_3 = \begin{bmatrix} 4\\2\\6 \end{bmatrix}$ ,  $\vec{\mathbf{w}} = \begin{bmatrix} 3\\1\\2 \end{bmatrix}$ .  
(a) How many vectors are in  $\{\vec{\mathbf{v}}_1, \vec{\mathbf{v}}_2, \vec{\mathbf{v}}_3\}$ ? Is  $\vec{\mathbf{w}} \in \{\vec{\mathbf{v}}_1, \vec{\mathbf{v}}_2, \vec{\mathbf{v}}_3\}$ ?

(b) How many vectors are in Span({ $\vec{\mathbf{v}}_1, \vec{\mathbf{v}}_2, \vec{\mathbf{v}}_3$ })? Is  $\vec{\mathbf{w}} \in \text{Span}({\{\vec{\mathbf{v}}_1, \vec{\mathbf{v}}_2, \vec{\mathbf{v}}_3\}})$ ?

4.2 Write the null space of  $A = \begin{bmatrix} 1 & 2 & 0 \\ 0 & 0 & 1 \end{bmatrix}$  as the span of the columns of a matrix N.