



NATIONAL UNIVERSITY OF TECHNOLOGY, ISLAMABAD  
QUIZ III (LINEAR ALGEBRA AND ODE), SPRING 2019  
DATED: OCTOBER 21, 2019

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Q.1 Let transformation  $T : \mathbb{R}^3 \rightarrow \mathbb{R}^4$  be given by

$$T \begin{pmatrix} x \\ y \\ z \end{pmatrix} := T \begin{pmatrix} x \\ 0 \\ y \\ 0 \end{pmatrix}.$$

Find  $\ker(T)$  and  $\dim(\ker(T))$ . Without calculating  $\text{rang}(T)$ , precise the  $\dim(\text{rang}(T))$ .

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“Start where you are. Use what you have. Do what you can.” ~ Arthur Ashe