Show all work clearly and in order. Please box your answers. Use answer lines where provided. 10 minutes.

- 1. Let $A = \begin{bmatrix} 1 & -1 \\ 0 & 0 \end{bmatrix}$
 - (a) Find a basis X for the column space of A.

(b) What is the dimension of the column space of A?

(b) _____

(c) Find a basis Y for the null space of A.

(d) What is the dimension of the null space of A?

(d) _____

(e) Find a basis Z for the row space of A.

(f) What is the dimension of the row space of A?