

QUIZ October 7, 2013

Clicker Instructions: A = True; B = False;  
C = I don't know; D = No truth value  
correct = 1pt; don't know = 0pt; wrong = 0pt

1. The following matrix is invertible:

$$\begin{bmatrix} 0 & 4 & 5 \\ 0 & 2 & 6 \\ 0 & 0 & 3 \end{bmatrix}$$

2. The following matrix is invertible:

$$\begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 2 \\ 1 & 1 & 0 \end{bmatrix}.$$

3. Suppose  $A$  is an  $n \times n$  matrix. If the equation  $A\mathbf{x} = \mathbf{b}$  has at most one solution for each  $\mathbf{b}$  in  $\mathbb{R}^n$ , then the columns of  $A$  span  $\mathbb{R}^n$ .
4. Suppose  $A$  is an  $n \times n$  matrix. If  $A$  is invertible, then  $A^T$  has  $n$  pivot positions.

5. Suppose  $A$  is an  $n \times n$  matrix. If the columns of  $A$  span  $\mathbb{R}^n$ , then the equation  $A\mathbf{x} = \mathbf{b}$  has exactly one solution for each  $\mathbf{b}$  in  $\mathbb{R}^n$ .
6. Suppose  $A$  is an  $n \times n$  matrix. If  $A$  is not row equivalent to the  $n \times n$  identity matrix, then the equation  $A\mathbf{x} = \mathbf{0}$  has more than just the trivial solution.