

Math 10B with Professor Stankova

Quiz 13; Tuesday, 4/24/2018

Section #211; Time: 11 AM

GSI name: Roy Zhao

Name: _____

Circle True or False or leave blank. (1 point for correct answer, -1 for incorrect answer, 0 if left blank)

1. True False If $\det(A) = 0$, we need to use Gaussian elimination to determine if $A\vec{v} = \vec{0}$ has 0 or ∞ solutions.
2. True False If $\det(A) = 0$, then 0 is an eigenvalue for A .

Show your work and justify your answers. Please circle or box your final answer.

3. (10 points) (a) (6 points) Let $A = \begin{pmatrix} 0 & -1 & 2 \\ 1 & 1 & 0 \\ 1 & 1 & 1 \end{pmatrix}$. Calculate A^{-1} using Gaussian elimination.

- (b) (1 point) Let $\vec{y} = \begin{pmatrix} y_1(t) \\ y_2(t) \end{pmatrix}$. Find the matrix B that such that $\vec{y}' = B\vec{y}$ given

$$\begin{cases} y_1'(t) = y_1(t) + 3y_2(t) \\ y_2'(t) = 9y_1(t) - 5y_2(t) \end{cases}$$

- (c) (3 points) Find the eigenvalues and eigenvectors of the matrix B found above.