

Linear Algebra
Quiz 8

Name: _____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

1. Find $\text{adj}(A)$ if $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 2 \\ 1 & 2 & 3 \end{bmatrix}$.

$$\text{adj}(A) = \begin{bmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 1 \end{bmatrix}$$

2. Now find $\det(A)$ for the same matrix.

Since $A \cdot \text{adj}(A) = \det(A) \cdot I$, the value of $\det(A)$ equals the first row of A times the first column of $\text{adj}(A)$: $1 \cdot (2) + 1 \cdot (-1) + 1 \cdot (0) = 1$.

3. Use the answers to Problems 1 and 2 to find A^{-1} .

$$A^{-1} = \frac{1}{\det(A)} \cdot \text{adj}(A) = \begin{bmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 1 \end{bmatrix}$$