

**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  $A^{-1}$ .

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