Name (Last, First): _____

Student ID: _____

1. Assume the following assertions are true:

There are restaurants at Berkeley.
In every Berkeley restaurant, there is a customer who does not order anything.

Circle each of the following assertions which must also then be true:

a. *There is a Berkeley restaurant in which all customers order something.*

b. *There is a Berkeley restaurant in which all customers order nothing.*

c. *There is no Berkeley restaurant in which each customer orders something.*

d. *There is no Berkeley restaurant in which each customer does not order something.*

e. *There is a Berkeley restaurant in which there is a customer who orders everything.*

2. For what numbers a, b, c is the following matrix in row echelon form (REF) or reduced row echelon form (RREF)?

$$\begin{bmatrix} 0 & a & -2 & b & 0 \\ 0 & 0 & 0 & c & 0 \\ 0 & 0 & 0 & 0 & a \end{bmatrix}$$

REF:

RREF: