Transition to College Math

Homework Unit 2 Lesson 4 Inverse Matrices

Name _____ Date _____ Period _____

1. Robert, Andromeda, and Guinevere are ages r, a, and g, respectively. The sum of their ages is 17 years. Robert is one year older than the sum of Andromeda and Guinevere's ages. Andromeda is three times as old as Guinevere. Use matrices to determine the age of each sibling.

2. Any matrix with ones and negative ones on the diagonal and zeroes everywhere else has the property that it is its own inverse.

   a. Show that the following matrix is its own inverse:

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$$

   b. Give an example of a 2 by 2 matrix that is its own inverse but has at least 1 nonzero number off the diagonal. Multiply the matrix by itself to show that it is its own inverse.