Marjorie Lee Browne
(1914-1979)

Marjorie Lee Browne was a pioneer for African American women mathematicians everywhere. She was one of the first African American women to receive a doctorate in mathematics. Her love of mathematics and the support of her family led her to a career in teaching that lasted a lifetime.

Browne's father was known as a whiz in mental arithmetic, and her stepmother taught her arithmetic and reading before she entered school. Browne attended Howard University where she obtained a Bachelor's degree in mathematics. She continued her education by attending the University of Michigan and there received her Master's and her Doctorate in mathematics. Browne continued her education with post-doctoral studies at Cambridge University, the University of Los Angeles, the University of California at Berkeley, and Columbia, just to name a few.[1]

In 1949, Browne began teaching at North Carolina Central University until her retirement in 1979. During twenty-five of those thirty years at NCCU, Browne was the only one to have a doctorate in mathematics.[2] Marjorie Lee Browne is a woman to be admired for her efforts to overcome the racial and gender barriers she faced in her life in order to become the person people look up to and respect. She is truly one of America's leading ladies of mathematics.

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[1] Morrow, Charlene and Teri Perl, Notable Women in Mathematics: A Biographical Dictionary. Greenwood Press, Westport, Connecticut, 1998.
[2] Kenshaft, Patricia Clark, Black Men and Women in Mathematical Research. Journal of Black Studies, Vol 18, No 2, Dec. 1987, pages 182-183.

We know Browne worked on Classical Groups. The definition of a Classical Group is as follows:

> "Classical Groups are the set of full linear groups of n x n matrices over the complex numbers, with determinants not equal to zero, and are given as GL (n,c). This includes its subgroups:
> 1. GL(n,r) which is the subset having real coefficients
> 2. SL(n,c) which is the subset of GL(n,r) with a determinant unity
> 3. U(n) which is the set of unitary matrices
> 4. SU(n) which is the unimodular group that is a subset of U(n) with a determinant of 1
> 5. O(n) which is the orthogonal group
> 6. SO(n) which is the rotation group
> 7. GL (n,R)^+ which are the elements of GL(n,r) with positive determinants."[3]

1. Give and example of each of the following:

    A. GL(n,r)

    B. SL(n,c)

    C. U(n)

[3] Browne, Marjorie Lee, A Note on the Classical Groups. American Mathematical Monthly, August 1955.

We know a group is a set G with operations * such that

1. $a, b \in G \Rightarrow a*b \in G$ "closure"
2. $a, b, c \in G \Rightarrow (a*b) * c = a* (b*c)$ "associative"
3. $\exists$ id $\in G$ such that a * id = id * a for all G "identity"
4. Given $a \in G, \exists b \in G$ such that ab=ba=id "inverse"

2. Is GL(2, R) with the operation of matrix addition a group?
   (Hint: Look closely at property four of the definition of a group.)