**Assignment 2**

1. Find all solutions (if any) to each of the following systems of linear equ;ations.



1. In each of the following, find (if possible) conditions on a, b, and c such that the system has no solution, one solution, or infinitely many solutions.

 

g. 

1. Find the rank of each of the following matrices.



1. consider the following statements about a system of linear equations with augmented matrix A. In each case either prove the statement or give an example for which it is false.Now assume that the augmented matrix A has 3 rows and 5 columns.

a. If the system is consistent, there is more than one solution.

b. The rank of A is at most 3.

c. If rank A = 3, the system is consistent.

d. If rank C = 3, the system is consistent.

1. In each of the following, find all values of a for which the system has nontrivial solutions, and determine all solutions in each case.



1. In each case find the matrix A.





1. What is the (2,3) –entry of AB and BA

 

1. Compute the determinants of the following matrices.
2. 

Use determinants to find which real values of c make each of the following matrices invertible.



1. Find the (2, 3)- entry of A−1



1. Let A, B, and C denote n×n matrices and assume that det (A) = −1, det(B) = 2, and det(C) = 3. Evaluate:
2.  
3. Let A be an n×n matrix and let I be the n×n identity matrix.



1. Find the inverse of each of the following matrices.





1. The (3,2)-cofactor (1,3)-cofactor and of matrix A



1. Find the adjugate of each of the following matrices.
2.  B. 
3. In each case find the characteristic polynomial, eigenvalues, eigenvectors, and (if possible) an invertible matrix P such that P−1AP is diagonal.



