MATH 170: EXAM 02

BLAKE FARMAN
UNIVERSITY OF SOUTH CAROLINA

Answer the questions in the spaces provided on the question sheets and turn them in at the end of the class period. Unless otherwise stated, all supporting work is required.

Name: _____

1. Problems

1 (20 Points)**.** *A bag contains five red marbles, two green marbles, one lavender marble, one yellow marble, and three orange marbles.*

(a) How many sets of four marbles include none of the red ones?

(b) How many sets of four marbles include exactly one red marble?

Date: April 21, 2014.

2 (20 Points). *Use Gauss-Jordan row reduction to solve the system of equations*

$$\begin{aligned} x - y + 7z &= 4 \\ x - y + 8z &= 3. \end{aligned}$$

If there is no solution, simply write 'no solution.' If the system is dependent, express your answer in terms of x, where $y = y(x)$ and $z = z(x)$.

3 (20 Points). *Use Gauss-Jordan row reduction to solve the system of equations*

$$\begin{aligned} 2x - y &= 0 \\ x + y + z &= 18 \\ x - z &= 2 \end{aligned}$$

If there is no solution, simply write 'no solution.' If the system is dependent, express your answer in terms of x, where $y = y(x)$ and $z = z(x)$.

4 (20 Points)**.** *Compute the matrix product,*

$$\begin{pmatrix} 1 & -1 \\ 1 & -1 \end{pmatrix} \begin{pmatrix} 3 & 7 \\ 3 & 7 \end{pmatrix}.$$

5 (20 Points)**.** *Use* **matrix inversion** *to solve the given system of equations*

$$\begin{aligned} -4x + y &= 4 \\ -4x - 3y &= 4. \end{aligned}$$

6 (Bonus - 10 Points)**.** *State Euler's Formula for plane graphs and use it to fill in the missing pieces of the following chart:*

V	F	E
4	3	
	3	6
5		7