Math 2568, Quiz #6, Spring 2015   Name _____**KEY**_____

Instructions: Show all work. Some problems will instruct you to complete operations by hand, some can be done in the calculator. To show work on calculator problems, show the commands you used, and the resulting matrices. **Give exact answers** (yes, that means fractions, square roots and exponentials, and not decimals) unless specifically directed to give a decimal answer. This will require some operations to be done by hand even if not specifically directed to. Be sure to complete all parts of each question.
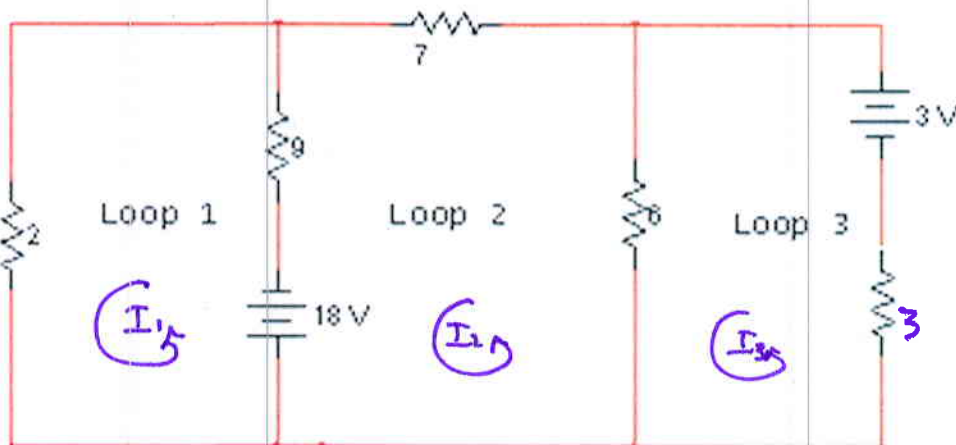
1. Suppose matrix A is a 9×7 matrix with 5 pivot columns. Determine the following.

   dim Col A = __5__   dim Nul A = __2__

   dim Row A = __5__   If Col A is a subspace of R^m, then n = __9__

   Rank A = __5__   If Nul A is a subspace of R^n, then m = __7__

2. Write a matrix to determine the loop currents, and use your calculator to solve the system. Round your answers to 2 decimal places.

$2I_1 + 9I_1 - 9I_2 = -18$

$-9I_1 + 9I_2 + 7I_2 + 6I_2 - 6I_3 = 18$

$-6I_2 + 6I_3 + 3I_3 = 3$

$$\begin{bmatrix} 11 & -9 & 0 & | & -18 \\ -9 & 22 & -6 & | & 18 \\ 0 & -6 & 9 & | & 3 \end{bmatrix}$$

$$\vec{I} = \begin{bmatrix} -1.23 \\ .50 \\ .66 \end{bmatrix}$$