

## MATH 54 – QUIZ 4

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Name: \_\_\_\_\_

**Instructions:** You have 20 minutes to take this quiz, for a total of 10 points. May your luck be invertible!

1. (5 points)

(a) (2 points) Use **row-reduction** to find  $A^{-1}$ , where:  $A = \begin{bmatrix} 1 & -4 \\ 2 & -7 \end{bmatrix}$

(b) (3 points) Let  $T$  and  $S$  be linear transformations such that the matrix of  $T$  is  $A$  and the matrix of  $S$  is  $B$ , where:

$$A = \begin{bmatrix} 1 & -4 \\ 2 & -7 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 0 & -2 \\ 3 & 2 & 0 \end{bmatrix}$$

Using (a), find the matrix of  $T^{-1} \circ S$ .

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Date: Friday, September 19th, 2014.

2. (5 points) Find a basis for  $Col(A)$  and a basis for  $Nul(A)$ , where  $A$  is the following matrix (with the following row-echelon form):

$$A = \begin{bmatrix} 2 & 4 & -5 & 2 & -3 \\ 3 & 6 & -8 & 3 & -5 \\ 0 & 0 & 9 & 0 & 9 \\ -3 & -6 & -7 & -3 & -10 \end{bmatrix} \sim \begin{bmatrix} 1 & 2 & -5 & 1 & -4 \\ 0 & 0 & 5 & 0 & 5 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$