Math 250, Quiz #2, February 11, 2015

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

For this quiz 
$$A = \begin{bmatrix} 1 & 1 & 4 \\ 3 & 3 & 12 \\ 2 & 0 & 2 \end{bmatrix}$$
,  $x = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$ , and  $b = \begin{bmatrix} 1 \\ t \\ 0 \end{bmatrix}$ .

1. Calculate the reduced row echelon form of the matrix given below for the system of linear equations  $A\vec{x} = \vec{b}$ . Indicate each elementary row operation that you use.

Γ1	1	4	1]	
3	3	12	t	$\longrightarrow$
$\lfloor 2 \rfloor$	0	2	0	

**2.** The equation  $A\vec{x} = \vec{b}$  is consistent when  $t = \_$ . For this value of t the general soution has  $\_\_$  free variables. (Fill in the blanks with the correct numbers.

**3.** For the value of t in (2) find the general soution  $\vec{x}$  to  $A\vec{x} = \vec{b}$ . Write the solution in *vector form*.

**4.** What is rank(A)? What is the nullity of A?