Show all work!

1. Solve this system by using elementary row operations on the equations or on the augmented matrix. Follow the systematic elimination procedure described in section 1.1.

$$x_1 - 3x_2 = 3$$
$$3x_1 + 10x_2 = 4$$

2. The augmented matrix of a linear system is given below. Continue the appropriate row operations and describe the solution set.

$$\begin{bmatrix} 1 & -4 & -5 & 3 \\ 0 & 1 & 3 & 2 \\ 0 & 0 & 2 & 4 \end{bmatrix}$$

3. Determine the value(s) of h for which the matrix below represents a consistent system.

$$\begin{bmatrix} 1 & h & 3 \\ 5 & 7 & 15 \end{bmatrix}$$

4. Row reduce this matrix to reduced echelon form. Circle the pivot positions in the final matrix and in the original matrix, and list the pivot columns.

$$\begin{bmatrix} 1 & 3 & 5 & 7 \\ 3 & 5 & 7 & 9 \\ 5 & 7 & 9 & 3 \end{bmatrix}$$

5. Find the general solution of the system with the given augmented matrix.

$$\begin{bmatrix} 1 & -7 & 0 & 6 & 5 \\ 0 & 0 & 1 & 3 & 2 \\ 2 & -14 & -4 & 0 & 2 \end{bmatrix}$$