**Section 1.5 – Solutions of Linear Equations**

1. Determine if the following systems has a non-trivial solution:
2. 
3. 
4. Describe all solutions of  in parametric vector form, where  is row equivalent to the given matrix. Careful, the matrix below is NOT the augmented matrix, but the coefficient matrix!
5. 
6. 
7. Describe and compare the solution sets of  and .
8. Describe the solutions of the following system in parametric vector form, and compare it to that of exercise 13.ii: .
9. Find the parametric equation of the line through  parallel to :
10. , 
11. , 
12. Does the equation  have a non-trivial solution, and does the equation have at least one solution for every possible ?
13.  is a  matrix with 3 pivot positions
14.  is a  matrix with 3 pivot positions
15.  is a  matrix with 2 pivot positions
16. Mark each statement as ***True*** or ***False*** and justify your answer.
17. An example of a linear combination of vectors  and  is the vector .
18. The weights , , …  in a linear combination  cannot all be zero.
19. The equation  describes a line through  parallel to .
20. The equation  is referred to as a vector equation.
21. If  is a  matrix and if the equation  is inconsistent for some in , then  cannot have a pivot position in every row.
22. The solution set of a linear system whose augmented matrix is , is the same as the solution set of  if .
23. If the equation  is consistent, then  is in the set spanned by the columns of.