Math 3333 homework

9. (2/24) 2.2 # 23 As asked in the book, find the condition on a, b, and c that allows solutions. Then, analyze the solutions as we did in class: find all solutions for a fixed a, b, and c, and write them as a particular solution plus a solution of the associated homogeneous system. Draw some pictures so that you can visualize all the parallel lines being smashed to a plane (the lines and plane don't have to be accurate for the numbers in the problem, the purpose is just to improve your drawing skills, and increase your visual understanding of matrix transformations).

10. (2/24) 2.2 # 29

11. (2/24) 2.3 Be able to do any of 2-16, turn in 9, 13, 14, 16, 19, 29

12. (2/24) 2.4 # 2(b)(c), 3(b), 6

13. (2/24) 4.1 be able to do 1-16, turn in 17-20

14. (3/8) 4.2 # 2, 3, 9, 12

15. (3/8) 4.3 Be able to do 1-18, turn in 4, 5, 9, 14, 17

16. (3/8) 4.4 Be able to do 1-11, turn in 3(b), 4(a), 9, 11, 13 [Any 2×2 matrix of trace 0 can be written as $\begin{bmatrix} a & b \\ c & -a \end{bmatrix}$]

17. (3/8) 4.5 Be able to do 1-4, 11-16, turn in 3, 4, 12(b)(c), 13, 14(a)(d)

18. (3/29) 4.6 Be able to do 1-14, 16, 17, 19-24, turn in 2, 6, 8, 13, 14, 17, 20, 21, 23

19. (3/29) 4.7 Be able to do 1-20, turn in 3, 4, 8, 11, 17, 19

20. (3/29) 4.9 Be able to do 1-8 (on 5-8, the (a) parts only), 9, 10, 12-15 [note: on 15, you would just need to figure out which ones have the same rank], turn in 5(a), 7(a), 13 [to find the rank, you just need to put the matrix in REF and count the number of nonzero rows], 24 [do row and column operations to change A into the desired form, then r is the rank], 34-36

21. (4/9) 4.8 Be able to do 1-12, 15-27, turn in 3, 4, 10-12, 15, 17, 21 (for 21, you can find v_S directly so you do not need to calculate $P_{S \leftarrow T}$), 22 (similar to 21), 26 (write $w_1 = \begin{bmatrix} a \\ b \end{bmatrix}$ and $w_2 = \begin{bmatrix} c \\ d \end{bmatrix}$, the transition matrix tells you that $\begin{bmatrix} 1 \\ 2 \end{bmatrix} = 2 \begin{bmatrix} a \\ b \end{bmatrix} + \begin{bmatrix} c \\ d \end{bmatrix}$, etc., continue and solve for a, b, c, and d and thereby find T, check your work at the end by showing that $\begin{bmatrix} 1 \\ 2 \end{bmatrix}_T$ really is $\begin{bmatrix} 2 \\ 1 \end{bmatrix}$, etc.)