ЗАДАНИЕ №1, 1-й курс МАТЕМАТИКА

Линейные подпространства L_1, L_2 пространства R^4 натянуты на системы векторов a_1, a_2, a_3 и b_1, b_2, b_3 соответственно. Найти

1) системы линейных уравнений, задающие подпространства L_1, L_2, а так же выяснить, какие векторы из L_2 лежат в L_1;

2) базисы суммы и пересечения заданных подпространств;

3) системы линейных уравнений, задающих подпространства $L_1 + L_2$ и $L_1 \cup L_2$;

4) базис линейного подпространства L_3, для которого $L_1 \oplus L_2$ равна прямой сумме подпространств L_1 и L_3.

1.	$a_1 = \{0, -2, 2, 1\}$	$a_2 = \{2, 1, 0, 1\}$	$a_3 = \{-1, 2, 1, 0\}$
	$b_1 = \{2, 1, 1, 1\}$	$b_2 = \{-2, 1, -1, 2\}$	$b_3 = \{-1, 2, 2, 2\}$
2.	$a_1 = \{-2, 1, -1, 0\}$	$a_2 = \{-1, 0, -1, 2\}$	$a_3 = \{2, 2, 2, -2\}$
	$b_1 = \{2, -2, -2, -2\}$	$b_2 = \{1, 1, -1, -1\}$	$b_3 = \{0, 0, -1, 0\}$
3.	$a_1 = \{1, 0, -1, 2\}$	$a_2 = \{-2, 2, 2, -2\}$	$a_3 = \{-2, -2, -2, -2\}$
	$b_1 = \{-2, 2, -1, 0\}$	$b_2 = \{-1, -1, -1, -2\}$	$b_3 = \{2, 1, -1, -1\}$
4.	$a_1 = \{-2, -2, 0, 0\}$	$a_2 = \{2, 0, 0, 2\}$	$a_3 = \{-1, 2, 0, 1\}$
	$b_1 = \{-2, -1, 2, -1\}$	$b_2 = \{2, 1, -1, -2\}$	$b_3 = \{-2, 0, -2, 1\}$
5.	$a_1 = \{0, 2, -2, 2\}$	$a_2 = \{-1, -1, 1, 0\}$	$a_3 = \{-2, 2, 2, -2\}$
	$b_1 = \{1, -2, -1, 0\}$	$b_2 = \{2, 0, 0, 0\}$	$b_3 = \{2, -2, 2, 2\}$
6.	$a_1 = \{1, 2, -2, 0\}$	$a_2 = \{2, 2, 0, 2\}$	$a_3 = \{2, -2, 2, -1\}$
	$b_1 = \{-1, 1, -1, 0\}$	$b_2 = \{-1, 0, -1, 0\}$	$b_3 = \{-1, 1, 0, -1\}$
7.	$a_1 = \{-1, 0, -1, 1\}$	$a_2 = \{-1, -2, 1, -1\}$	$a_3 = \{-1, -1, 2, 2\}$
	$b_1 = \{2, -1, 0, 2\}$	$b_2 = \{-2, 0, 1, 1\}$	$b_3 = \{2, -2, 2, -2\}$
8.	$a_1 = \{-2, 1, -2, -2\}$	$a_2 = \{0, 0, 2, 2\}$	$a_3 = \{-2, -2, -1, 2\}$
	$b_1 = \{-2, -2, 1, 0\}$	$b_2 = \{0, 2, -1, -2\}$	$b_3 = \{-1, 0, -2, 2\}$
9.	$a_1 = \{0, -1, -2, 2\}$	$a_2 = \{2, 1, -1, 1\}$	$a_3 = \{1, -2, 2, -1\}$
	$b_1 = \{1, -2, 1, 1\}$	$b_2 = \{1, 2, -1, 2\}$	$b_3 = \{0, 1, -2, 0\}$
10.	$a_1 = \{-1, -2, 1, 0\}$	$a_2 = \{0, -1, -1, -2\}$	$a_3 = \{0, -1, 2, 1\}$
	$b_1 = \{-2, -1, 0, 2\}$	$b_2 = \{0, -2, -2, -1\}$	$b_3 = \{1, 2, 1, 2\}$
11.	$a_1 = \{0, -1, 1, -2\}$	$a_2 = \{-2, -1, -2, 2\}$	$a_3 = \{1, 2, 0, 0\}$
	$b_1 = \{-2, 1, 1, 0\}$	$b_2 = \{-2, -1, 1, 1\}$	$b_3 = \{-1, -2, 1, 2\}$
12.	$a_1 = \{-1, 1, -1, 2\}$	$a_2 = \{2, -2, 0, 1\}$	$a_3 = \{-2, 2, -2, 1\}$
	$b_1 = \{-1, -2, 2, -2\}$	$b_2 = \{0, 1, 2, -1\}$	$b_3 = \{1, 0, 1, -2\}$
13.	$a_1 = \{-1, 0, 2, 2\}$	$a_2 = \{1, 1, 0, -2\}$	$a_3 = \{-2, 1, 1, 2\}$
	$b_1 = \{-1, -1, -2, 2\}$	$b_2 = \{0, 2, 2, 0\}$	$b_3 = \{-2, 1, -2, 2\}$
14.	$a_1 = \{2, 0, 1, 0\}$	$a_2 = \{-1, 1, 0, 1\}$	$a_3 = \{-1, 1, 0, 1\}$
	$b_1 = \{-2, -2, 0, 0\}$	$b_2 = \{-2, 2, 2, 1\}$	$b_3 = \{-1, 1, -1, -1\}$
15.	$a_1 = \{-1, -1, -1, 0\}$	$a_2 = \{-2, 0, 0, 1\}$	$a_3 = \{-1, 2, 0, 1\}$
	$b_1 = \{1, 0, 0, 2\}$	$b_2 = \{0, 2, -1, 1\}$	$b_3 = \{0, -2, 1, 2\}$

16. $a_1 = \{2, -2, 0, 2\}$ $a_2 = \{0, 0, -1, 1\}$ $a_3 = \{-1, 2, 0, 1\}$
$b_1 = \{-1, 1, -2, 2\}$ $b_2 = \{-1, 0, 0, -2\}$ $b_3 = \{-1, 2, 2, -2\}$

17. $a_1 = \{2, -1, -2, -1\}$ $a_2 = \{1, -2, -2, 2\}$ $a_3 = \{-2, 0, 1, 1\}$
$b_1 = \{-1, 1, 0, -2\}$ $b_2 = \{0, -1, 1, 2\}$ $b_3 = \{2, 1, 0, 1\}$

18. $a_1 = \{0, 1, 2, -1\}$ $a_2 = \{2, 2, -2, 2\}$ $a_3 = \{0, -2, 1, -2\}$
$b_1 = \{-1, -2, 1, -2\}$ $b_2 = \{2, 1, -2, 1\}$ $b_3 = \{0, 1, 0, 2\}$

19. $a_1 = \{-2, 2, 1, 0\}$ $a_2 = \{-1, -2, -1, 0\}$ $a_3 = \{-1, -1, 1, -1\}$
$b_1 = \{0, 1, 1, 1\}$ $b_2 = \{0, -2, 0, -1\}$ $b_3 = \{1, 2, -1, 1\}$

20. $a_1 = \{-1, 2, 2, 0\}$ $a_2 = \{-2, 2, 1, 0\}$ $a_3 = \{-1, 0, -1, 2\}$
$b_1 = \{1, -2, -2, 0\}$ $b_2 = \{-2, 1, 2, 1\}$ $b_3 = \{-1, 0, 0, -2\}$

21. $a_1 = \{1, 2, -1, -1\}$ $a_2 = \{-2, 2, -1, 2\}$ $a_3 = \{-2, 2, 1, 1\}$
$b_1 = \{-2, 0, 2, -1\}$ $b_2 = \{1, -1, 1, 1\}$ $b_3 = \{-2, -1, -1, 0\}$

22, $a_1 = \{-2, -1, 1, -2\}$ $a_2 = \{-2, -1, 1, 1\}$ $a_3 = \{-2, 1, 1, -2\}$
$b_1 = \{-2, -1, 1, 2\}$ $b_2 = \{2, 1, -1, 1\}$ $b_3 = \{-1, -1, -2, 0\}$

23. $a_1 = \{0, 0, -2, -2\}$ $a_2 = \{1, 0, 0, 1\}$ $a_3 = \{1, -1, 1, -1\}$
$b_1 = \{-2, 0, 0, 0\}$ $b_2 = \{0, -1, 0, 2\}$ $b_3 = \{2, -2, 2, 2\}$

24. $a_1 = \{1, 1, -2, -1\}$ $a_2 = \{-1, 0, 0, 1\}$ $a_3 = \{-1, -2, -1, -1\}$
$b_1 = \{2, -2, 1, -2\}$ $b_2 = \{1, -2, -2, 2\}$ $b_3 = \{2, 1, -2, 2\}$

25. $a_1 = \{2, 1, 0, -2\}$ $a_2 = \{-1, 2, 0, 1\}$ $a_3 = \{-2, 0, -2, 0\}$
$b_1 = \{0, 0, -2, -1\}$ $b_2 = \{1, 2, -2, 0\}$ $b_3 = \{1, 1, -2, -2\}$