Self test number 1 - SPECIMEN

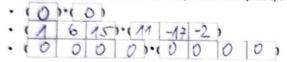
Task 1

v1 = v2 =	The following vectors are given. Determine whether these vectors can be basis or generators of a vector space and determine the dimension of this space. $v1 = (-27, -24, -9, -21, 6)$ $v2 = (7, 5, 1, 5, 2)$ $v3 = (-4, -6, -4, -4, 8)$							
Que Wha	estion 1 at do you know about the linear dependence of these vectors? These vectors are linearly independent These vectors are linearly dependent							
Que Can	these vectors be generators? These vectors can be vector space generators with dimension 5 These vectors can be vector space generators with dimension 4 These vectors can be vector space generators with dimension 3 These vectors can be vector space generators with dimension 2 These vectors cannot be vector space generators.							
Que Car	These vectors can form a basis of a vector space of dimension 5 These vectors can form a basis of a vector space of dimension 4 These vectors can form a basis of a vector space of dimension 3 These vectors can form a basis of a vector space of dimension 2 These vectors can form a basis of a vector space of dimension 2 These vectors cannot form a basis of a vector space							

Task 2

Multiply the following matrices A * B

The element of the resulting matrix C= A*B in row 3 and column 1 is a (scalar) product of numbers or vectors - input these vectors' element values below into the suitable answer structure (if some answer structures from below do not correspond with the required operation, fill them with zeros.)



Value of the element C₃₁ is -12.1

The resulting matrix has dimension 4 + 4

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•	STATE OF	or.	inear	COLUMN	NOTES:	15	O Ven

Salve it using the Jordanians method of a

 $-7x_1 + 21x_2 - 7x_3 + 2Px_4 = -217$ $40x_1 + 15x_2 + 5x_3 + 5x_4 = -135$ $6x_1 - 1x_2 + 2x_3 + 2x_4 = -76$ $24x_1 + 4x_2 + 8x_3 + 4x_4 = -192$

Question 1

How many solutions does this system of linear equations have?

- No solution
- One solution
- Infinitely many solutions

Question 2

How many variables are basic?

In this case, there are H basic variables.

Question 3

How many variables are non-basic?

In this case, there are 0 non-basic variables.

Question 4

Find the basic solution of the given system?

If it does not exist, write 0

$$x_1 = -2$$
, $x_2 = 6$, $x_3 = -13$, $x_4 = -16$

Question 5

Find another basic solution for the given system?

If it does not exist, write 0

Question 6

Can we require the X4 variable to be equal to 22 in the solution?

- Yes
- No

Question 7

What is the solution to the system of equations in such a case?

If it does not exist, write 0

Task 4

Given a matrix A and a vector w

w=(100, -32,-44)

Find the vector v for which A*v=w

Instructions: use the inverse matrix and its property Ainv*A = E

Question 1
Find the vector v?
If it does not exist, write 0

Compute	the	inverse	of the	following	metrix A
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10	10	-14
8	8	•)
10	-15	5 /

Show the step-by-step calculation steps
Attention - Do not change the order of rows and columns when calculating.

After the first step of the calculation, you will get a matrix (If it cannot be counted, enter 0)

1	19/4	1-574	1/8	1/8	0
6	1-10	14	-1	0	0
0	-75/2_	3572	-574	-5/4	1

FRACTION WRITE AS DECIMAL DUMBERS,

After the second step of the calculation, you will get a matrix (If it cannot be counted, enter 0)

1	10	19/10	-1/10	1/8	0
0	1	1-715	1 410	0	0
0	0	-35	572	-5/4	1

The inverse matrix is (If it cannot be counted, enter 0)

1/28	2/35	19/350
0	1/20	-1/25
-1114	1/28	-1/35
11	1	7

The determinant of the matrix A is equal to	2	800		-		-
Since the determinant of the matrix A is		, this matrix is	1:	and	has:	is the inverse matrix.
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