**Linear Algebra. Test 1. Variant 1.**

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| First name | Last name | Group | Points#1 |
|  |  | BS1- |  |

I am, \_\_\_\_\_ (initials), confirming that I have read the following rules and agree to comply with them, that all solutions on this paper is my own work.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (signature)

Rules:

* no talking AT ALL is allowed during the exam and after it (if you are still in the room)
* when time is up, you have to put down your pen (pencil) and do NOT write anything else
* you can NOT leave your seat till the end of the test
* any electronic devices are not allowed

1. Find linear independent vectors (exclude dependent).
2. Find rank(A) if A is a composition of this vectors. Find rank (AT).

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| First name | Last name | Group | Points#2 |
|  |  | BS1- |  |

1. Consider matrix A
   1. Find the symmetric factorization A = LDLT
   2. Find A inverse.

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| First name | Last name | Group | Points#3 |
|  |  | BS1- |  |

1. Consider matrix A
   1. Reduce these matrices A to its ordinary echelon forms U
   2. Find a special solution for each free variable and describe every solution to Ax = 0.
   3. For which right-hand sides (find a condition on b1, b2, b3) Ax=b is solvable?
   4. Provide an example of vector b that makes this system solvable.
   5. Find all solutions for Ax=b using b from previous part (2.4).