1. Which of the following Python libraries contain Gram-Schmidt orthogonalization function
   1. Numpy
   2. Sympy
   3. Scipy
   4. Mathplotlib
2. Look at the following code

from sympy.matrices import Matrix, GramSchmidt

V = [Matrix([1,-2,2]), Matrix([5,0,-1]), Matrix([4,3,7])]

Which of the following lines of code outputs an orthonormalized system of vectors built from the list of vectors V

* 1. GramSchmidt(V, True)
  2. GramSchmidt(V, False)
  3. GramSchmidt(V)
  4. Matrix.orthogonalize(\*V)

1. What does the following code do?

from sympy.matrices import Matrix, GramSchmidt

V = [Matrix([1,-2,2]), Matrix([5,0,-1]), Matrix([4,3,7])]

vect = GramSchmidt(V, True)

matrix = Matrix.hstack(\*(vect[i] for i in range(3)))

* 1. Creates the orthogonal matrix Q in the QR factorization of V
  2. Creates a matrix, which columns are the orthonormal vectors obtained as the result of Gram-Schmidt orthogonalization of V
  3. Creates an upper-triangular matrix, which is the result of elimination of matrix V
  4. Creates a Householder matrices , whose determining vectors are those given in V