CMPUT 307

Quiz 3, Due Feb. 28, 2022 (60 mins., max 40 marks)

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Perform the principal component analysis (PCA) considering the following two-dimensional vector (representing n = 4 points in 2D):

1. [5] Calculate mean **:**  
     
     
   **=**
2. [5] Center points by computing
3. [5] Calculate the covariance matrix   
     
     
     
   A =

1. [10] Find the eigenvalues  solving

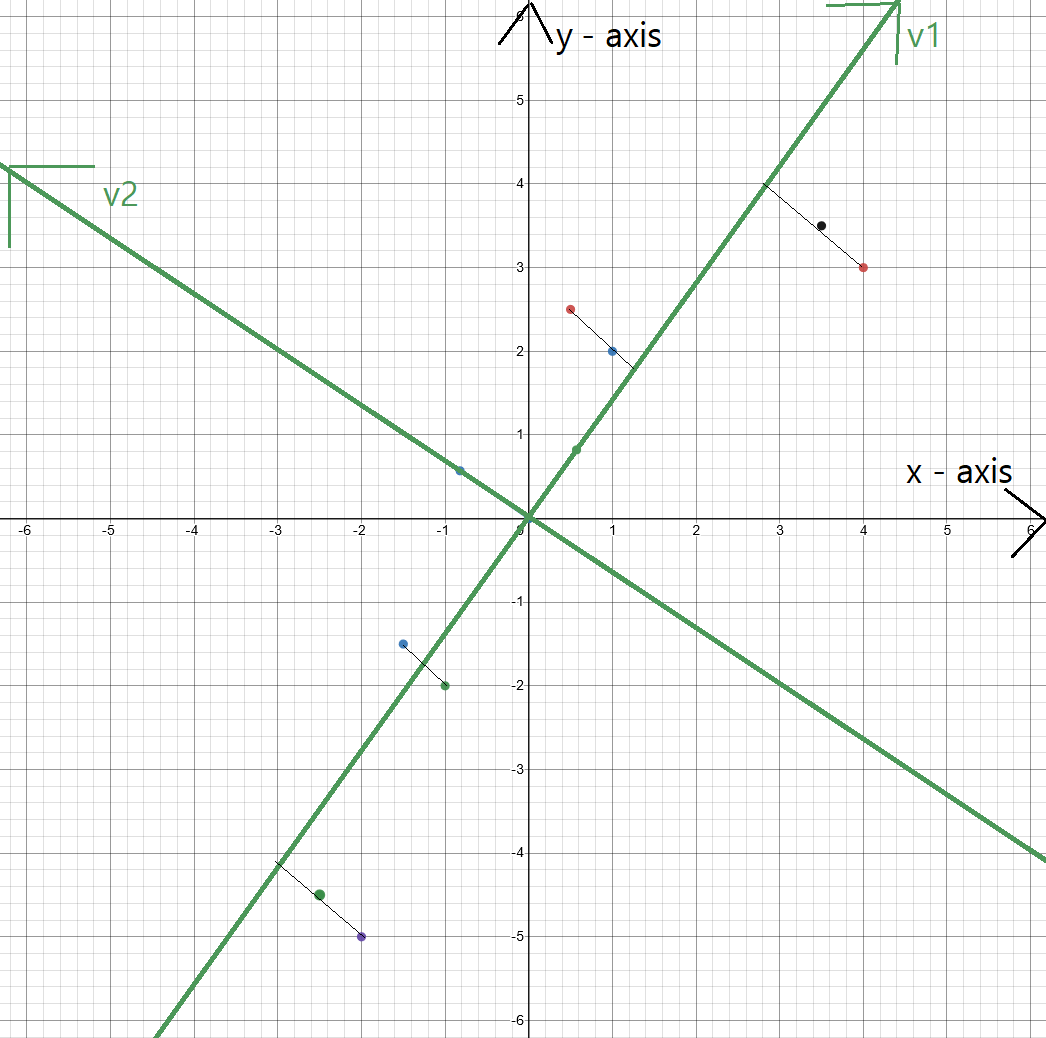
1. [10] Calculate the eigenvector and eigenvector

a1 = 0.571

b1 = 0.821  
first eigen vector =

a2 = -0.821

b2 = 0.571  
second eigen vector =

[5] Interpret the PCA of in the following graph (draw the 2 eigen vectors and the 4 points):  
  
  
 The points along with centered points and the two eigen vectors