1. See also q1.m

Steps of calculation:

1. First compute the mean of x1 and x2, adjust data by subtract their mean value.
2. Compute the COV matrix of adjusted data;
3. Run eig() function on COV matrix and get eigen values and eigen vectors.
4. The two eigen vectors given are e1 and e2, below is the plotting of them with adjusted data.









1. One-dimensional data:

0.827970186201088

-1.77758032528043

0.992197494414889

0.274210415975400

1.67580141864454

0.912949103158808

-0.0991094374984440

-1.14457216379866

-0.438046136762450

-1.22382055505474

the range of the data=3.4534;