Assignment1 – Q3

Real(lambda) vs Imag(lambda)

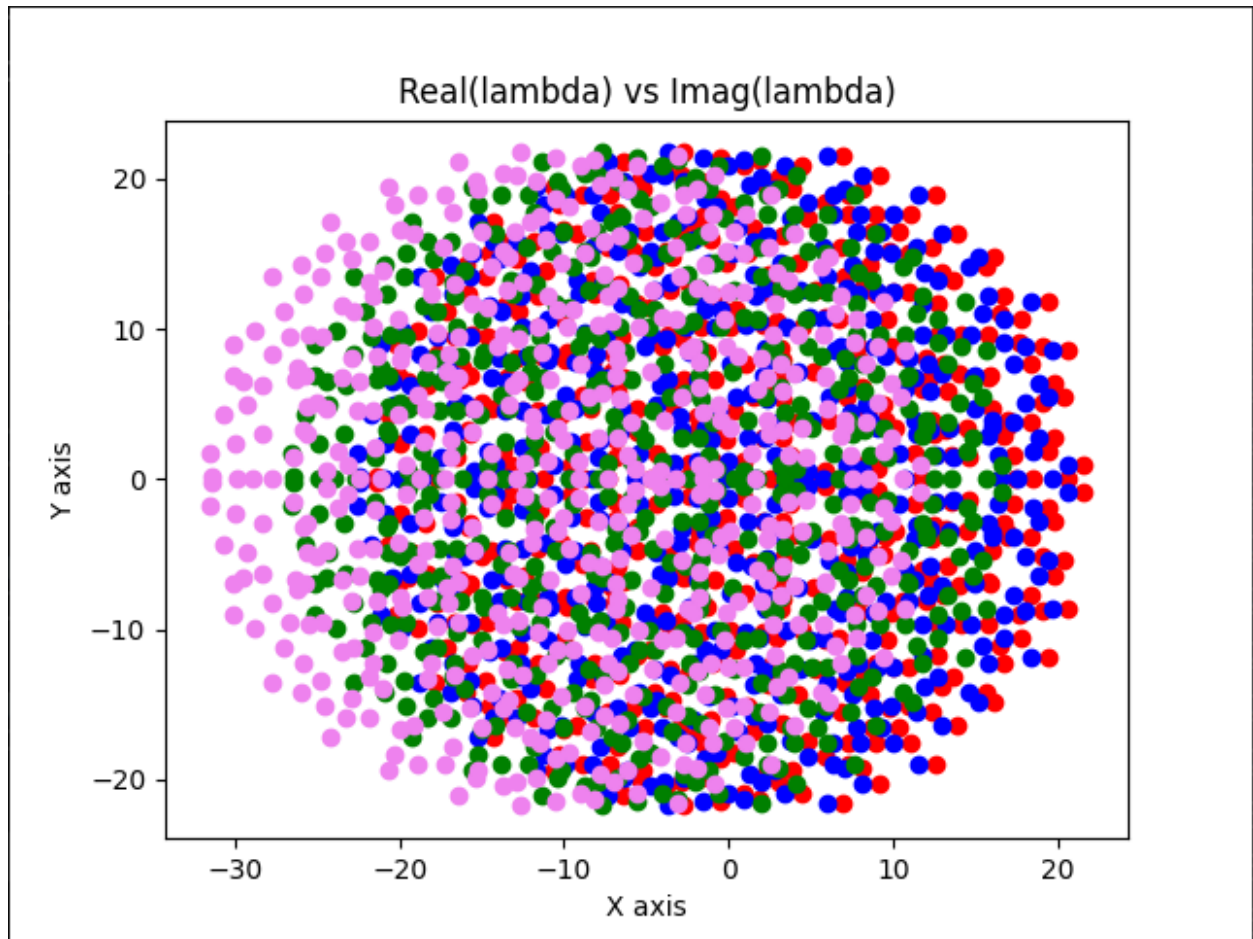**(a).**

The shape of the plot is a **circle.**

(b).

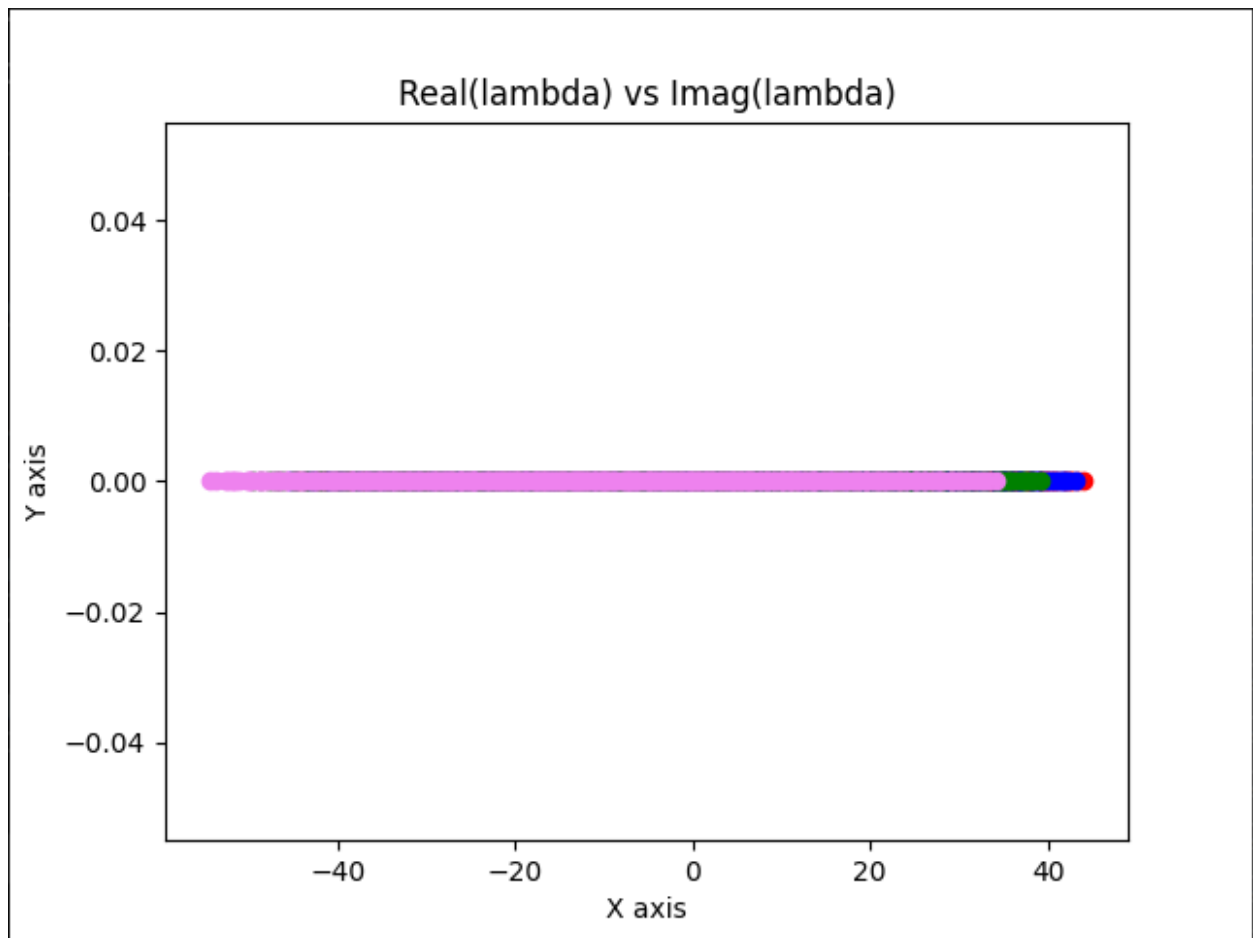As the value of **D** increases the Circle moves **towards the left as** shown in the image**.**

Coloring:
D = 0 ==> Red
D = 1 ==> Blue
D = 5 ==> Green
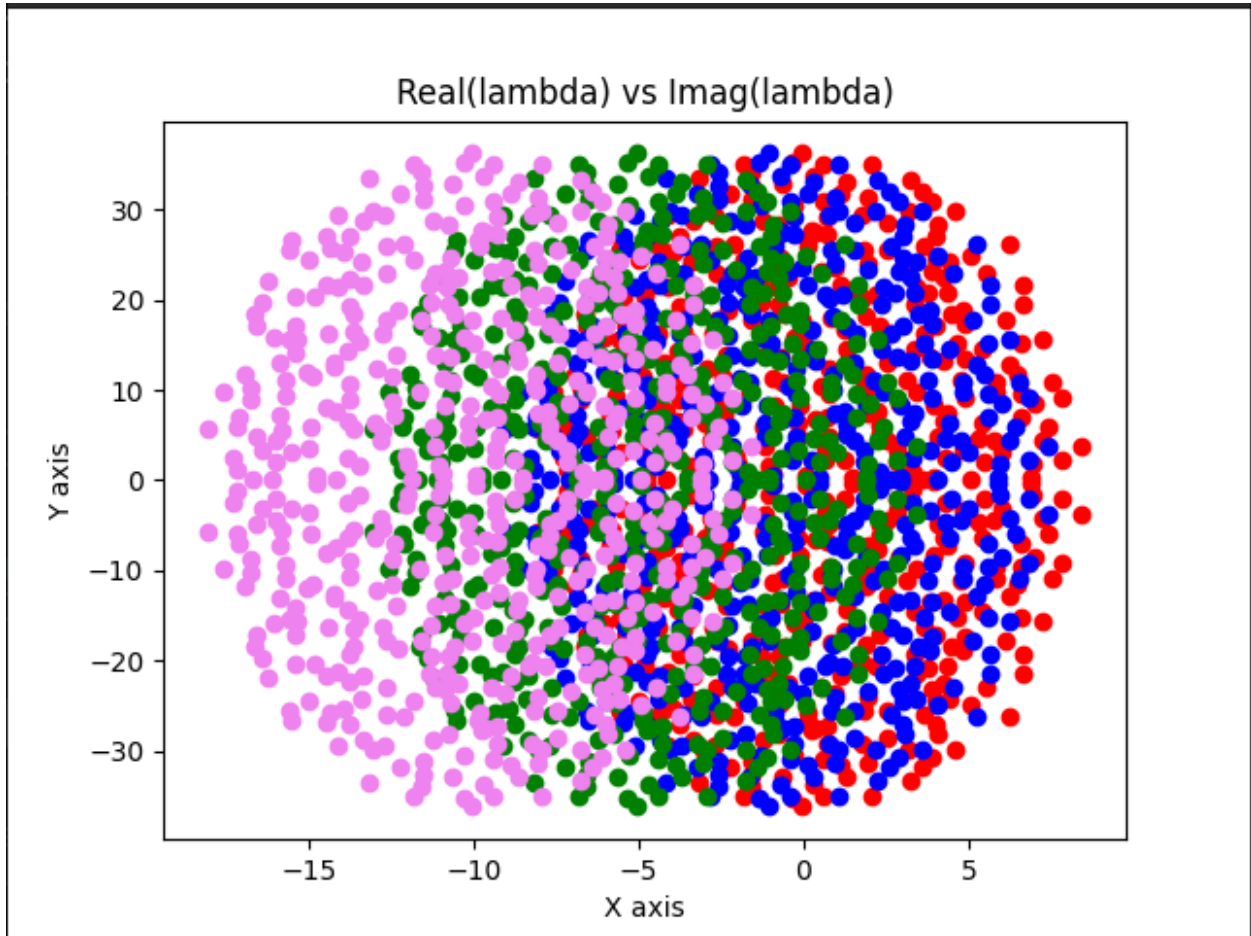**D = 10 ==> Violet**

(c).

Real(lambda) vs Imag(lambda)

If the matrix is Real and Symmetric,**all the eigenvalues will be Real** thus the Plot is a **Straight Line** as shown above.
Again the line moves towards the left as the value of D increases.

Bonus:-

Here we take the correlation to be `(A[i][j]>0 and A[j][i]<0)` for the entries in the matrix.

Real(lambda) vs Imag(lambda)

Thus we get the plot to **Ellipse**.

Again as the value of **D increases the ellipse moves towards left**.