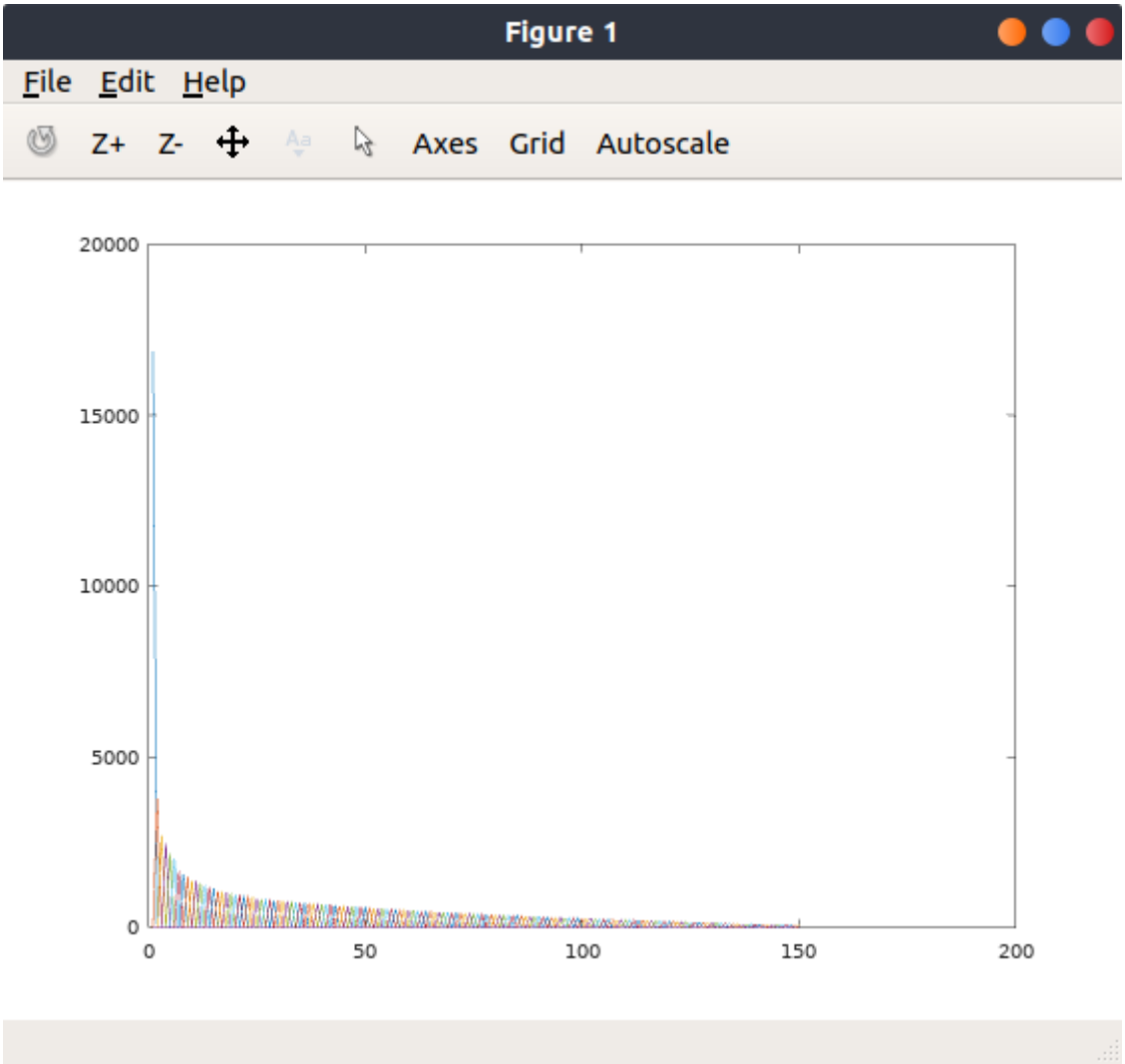
Task 1: Citesc sub forma de matrice imaginea data ca parametru si aplic functia de descompunere a valorilor singulare asupra acesteia. Apoi, se compreseaza imaginea in functie de valoarea k prin modificarea elementelor de pe pozitii mai mari decat k cu 0. In final se compune matricea A_k.

Task 2 – Imaginea 2



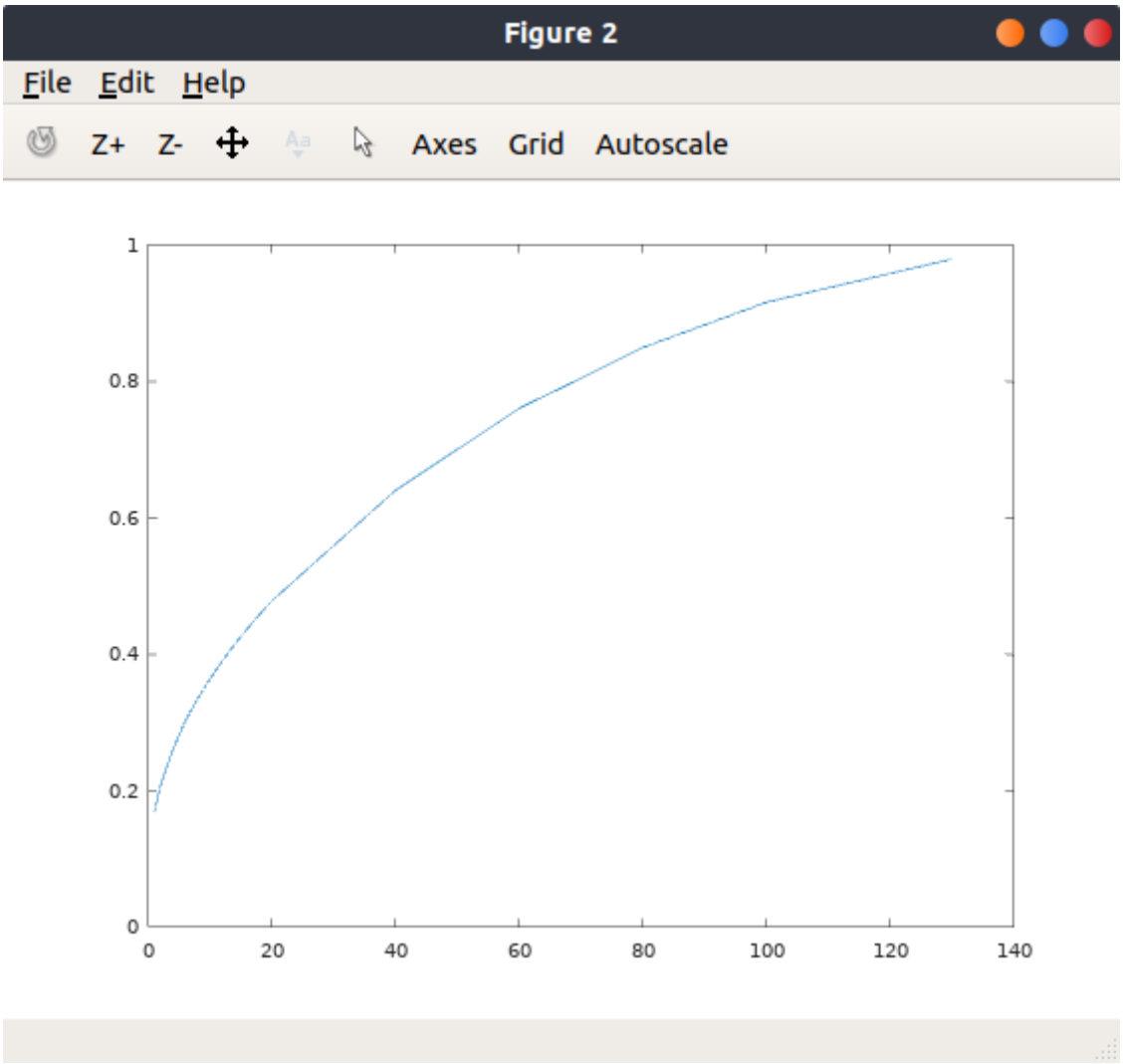


Figure 2
File Edit Help
Z+ Z- Axes Grid Autoscale
1
0.8
0.6
0.4
0.2
0
0 20 40 60 80 100 120 140

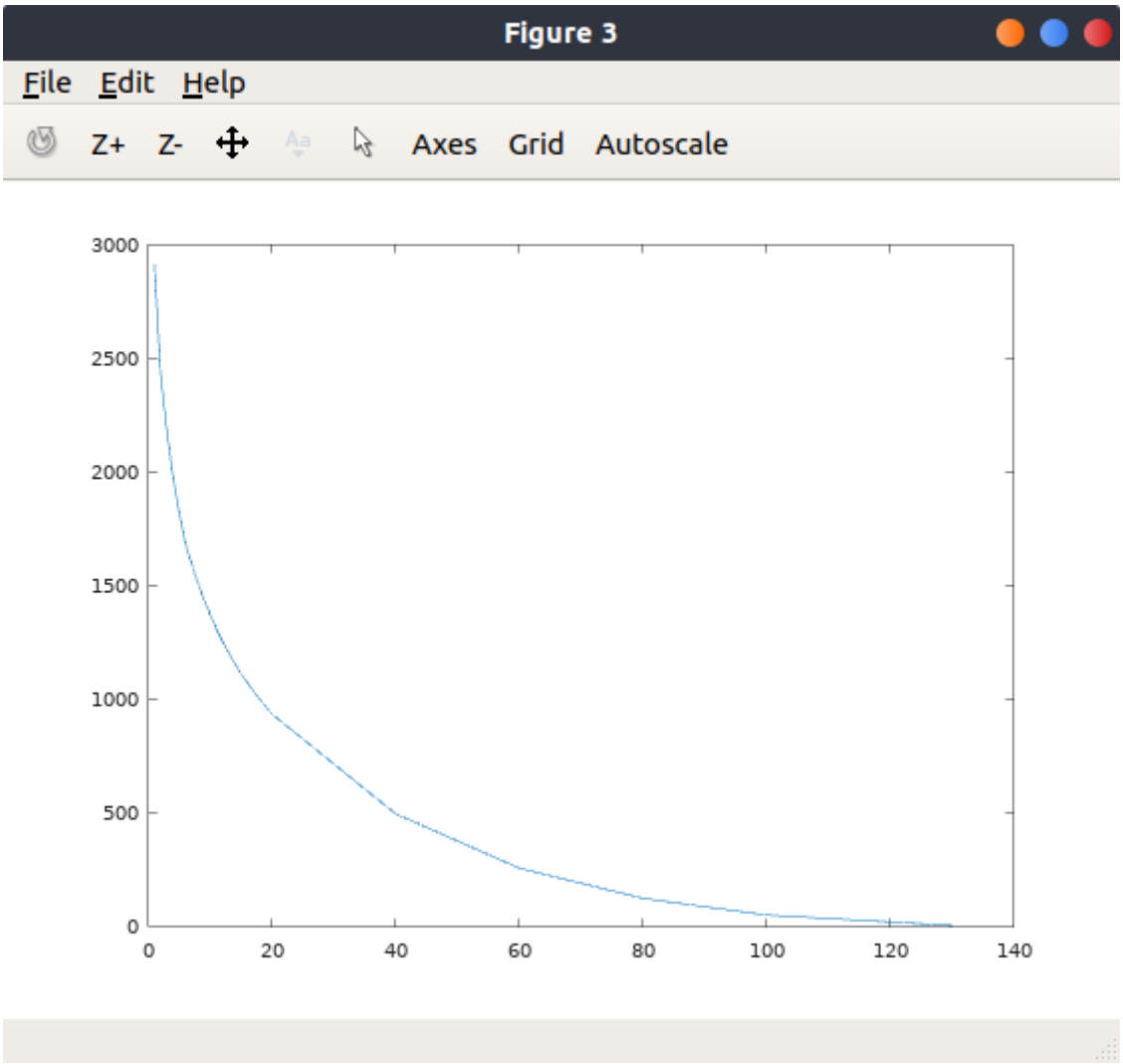


Figure 3
File Edit Help
Z+ Z- Axes Grid Autoscale
3000
2500
2000
1500
1000
500
0
0 20 40 60 80 100 120 140

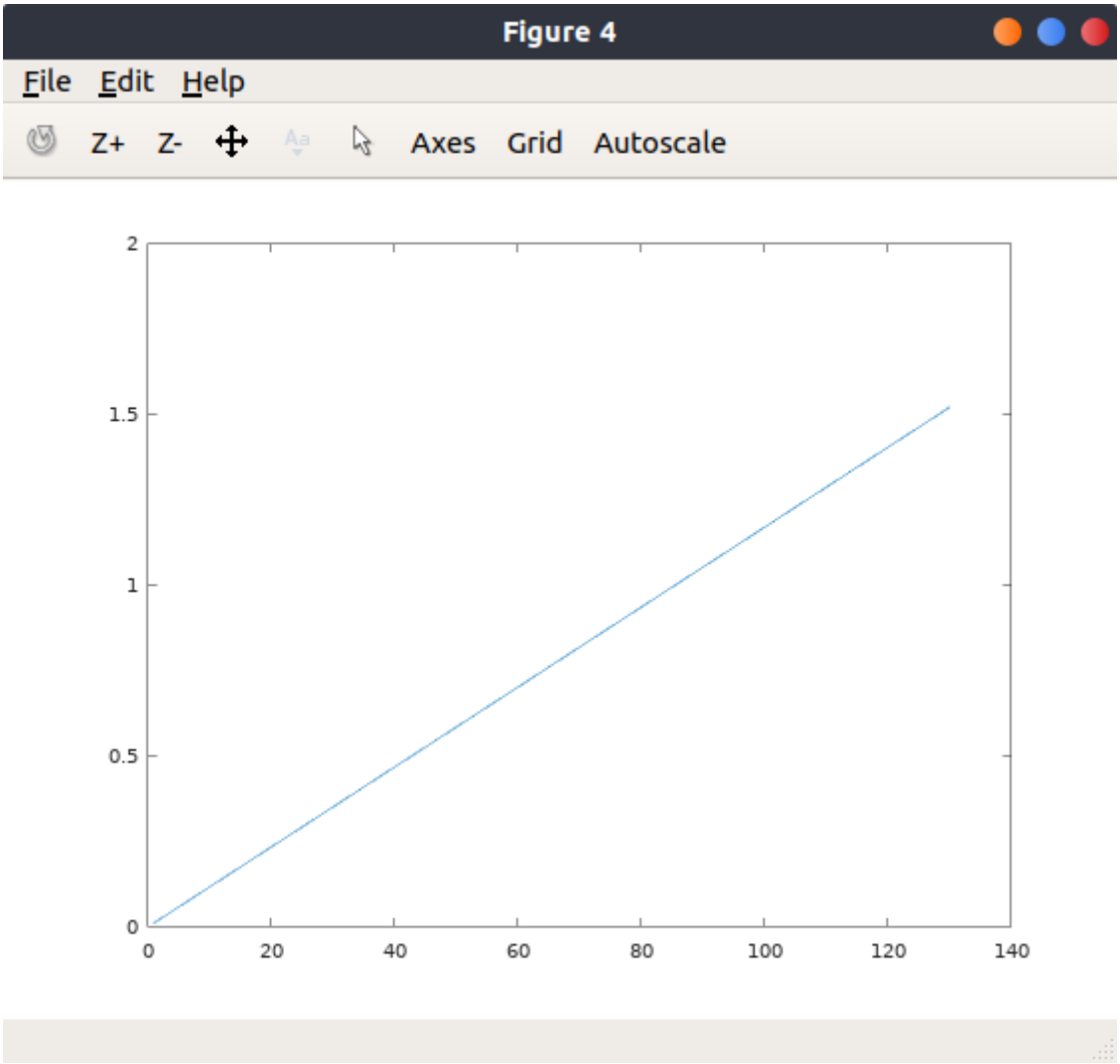
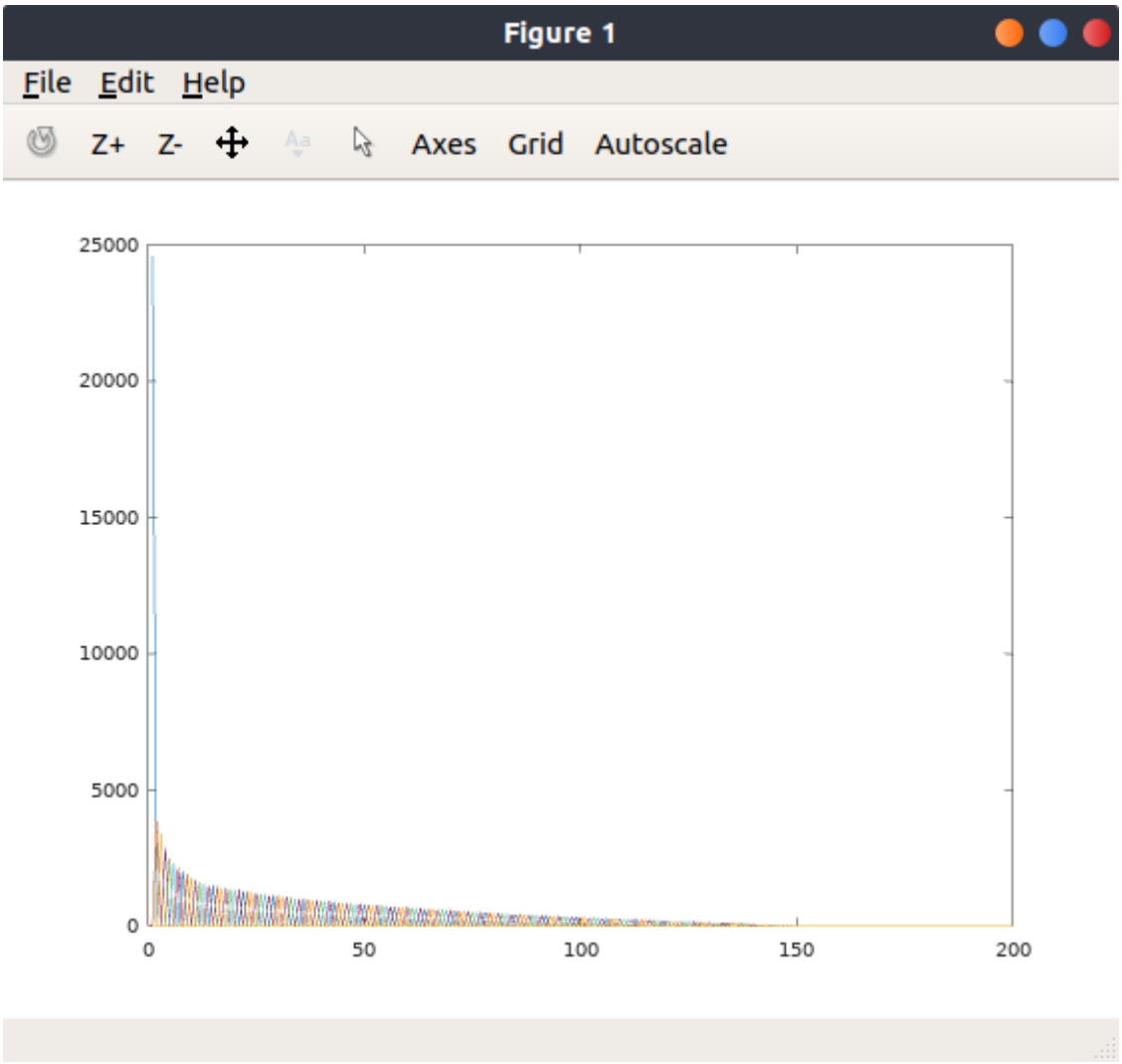


Figure 4
File Edit Help
Z+ Z- Axes Grid Autoscale
2
1.5
1
0.5
0
0 20 40 60 80 100 120 140

Task 2 – Imaginea 4



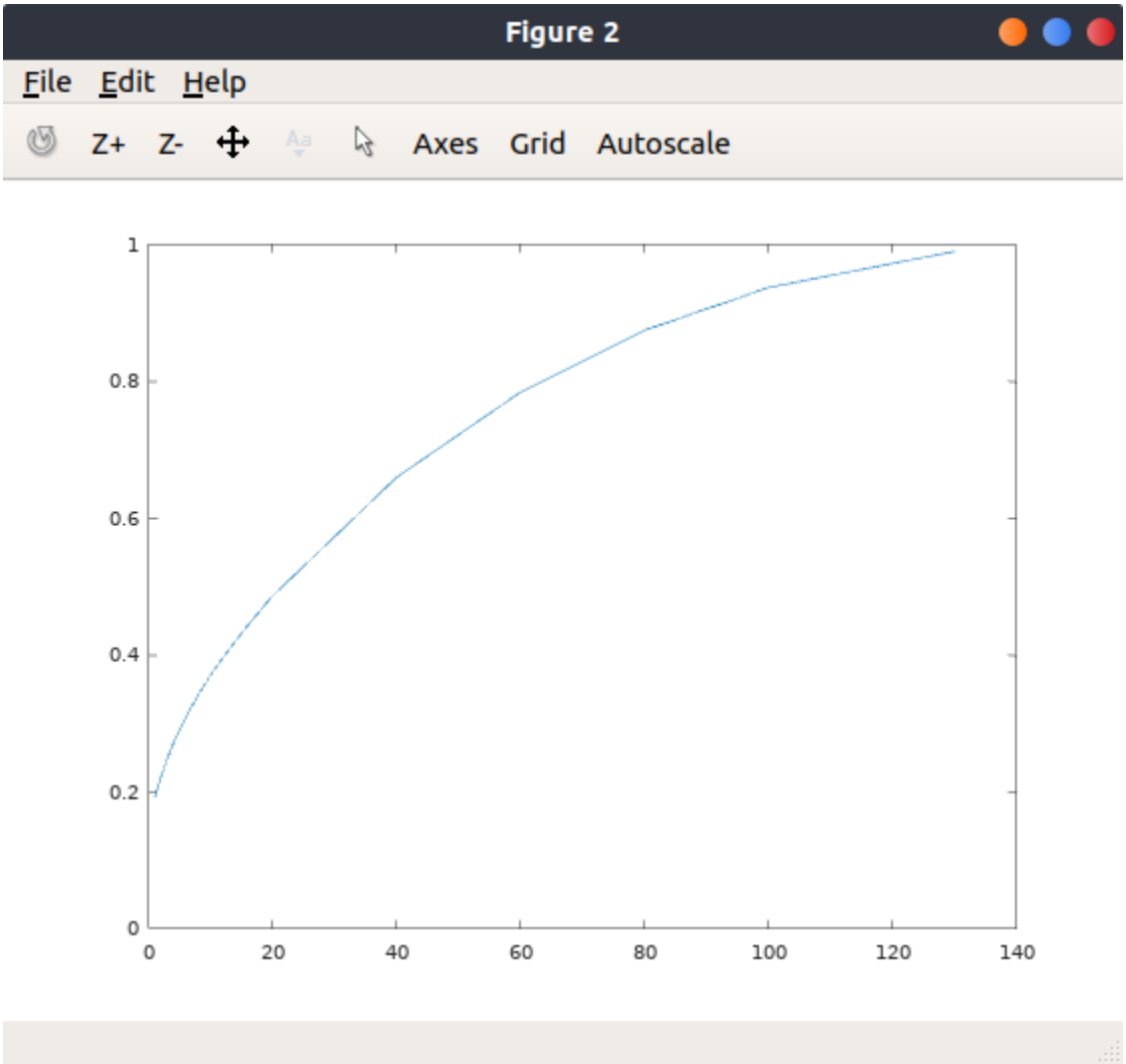


Figure 2
File Edit Help
Z+ Z- Axes Grid Autoscale
1
0.8
0.6
0.4
0.2
0
0 20 40 60 80 100 120 140

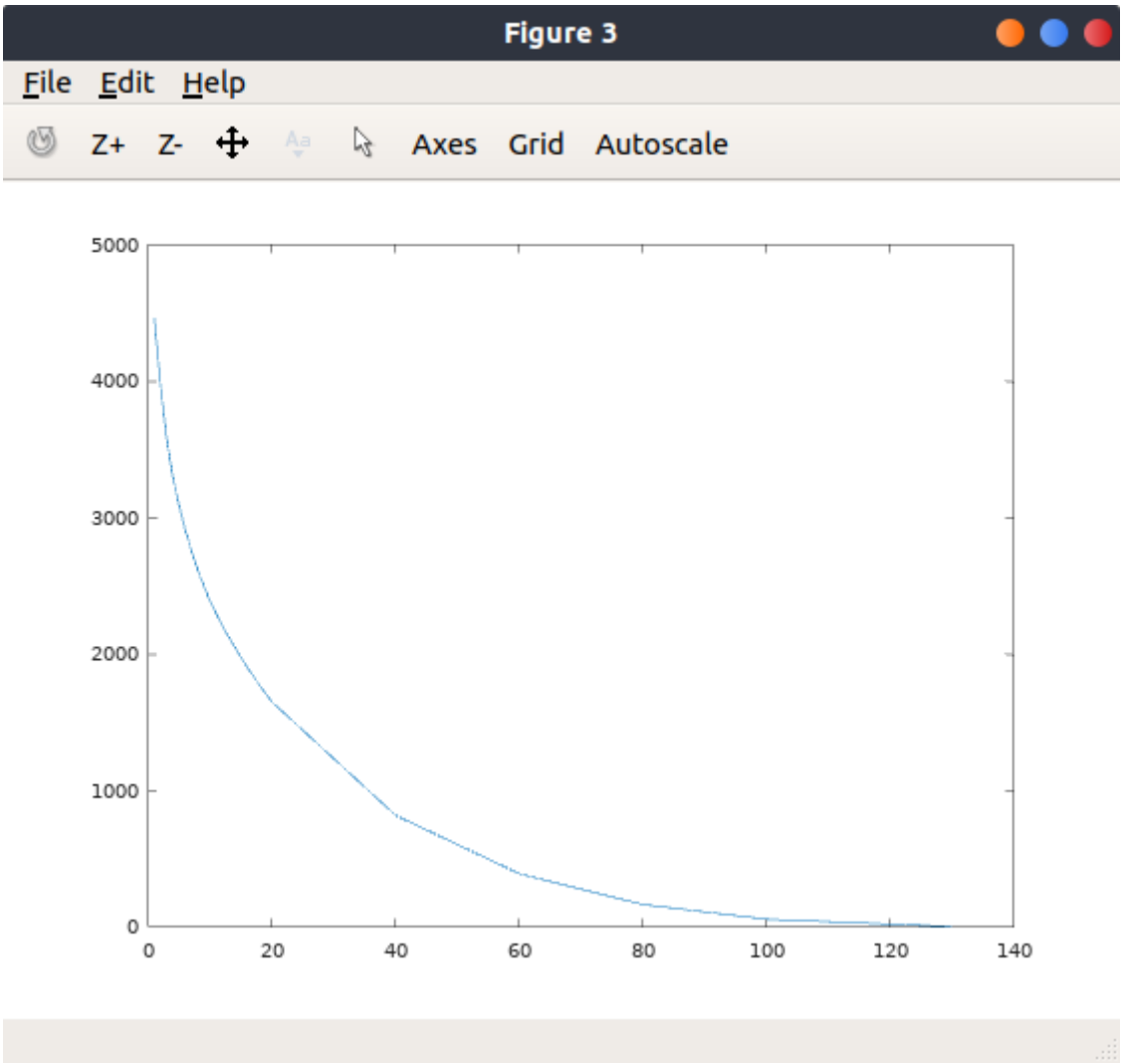


Figure 3
File Edit Help
Z+ Z- Axes Grid Autoscale
5000
4000
3000
2000
1000
0
0 20 40 60 80 100 120 140

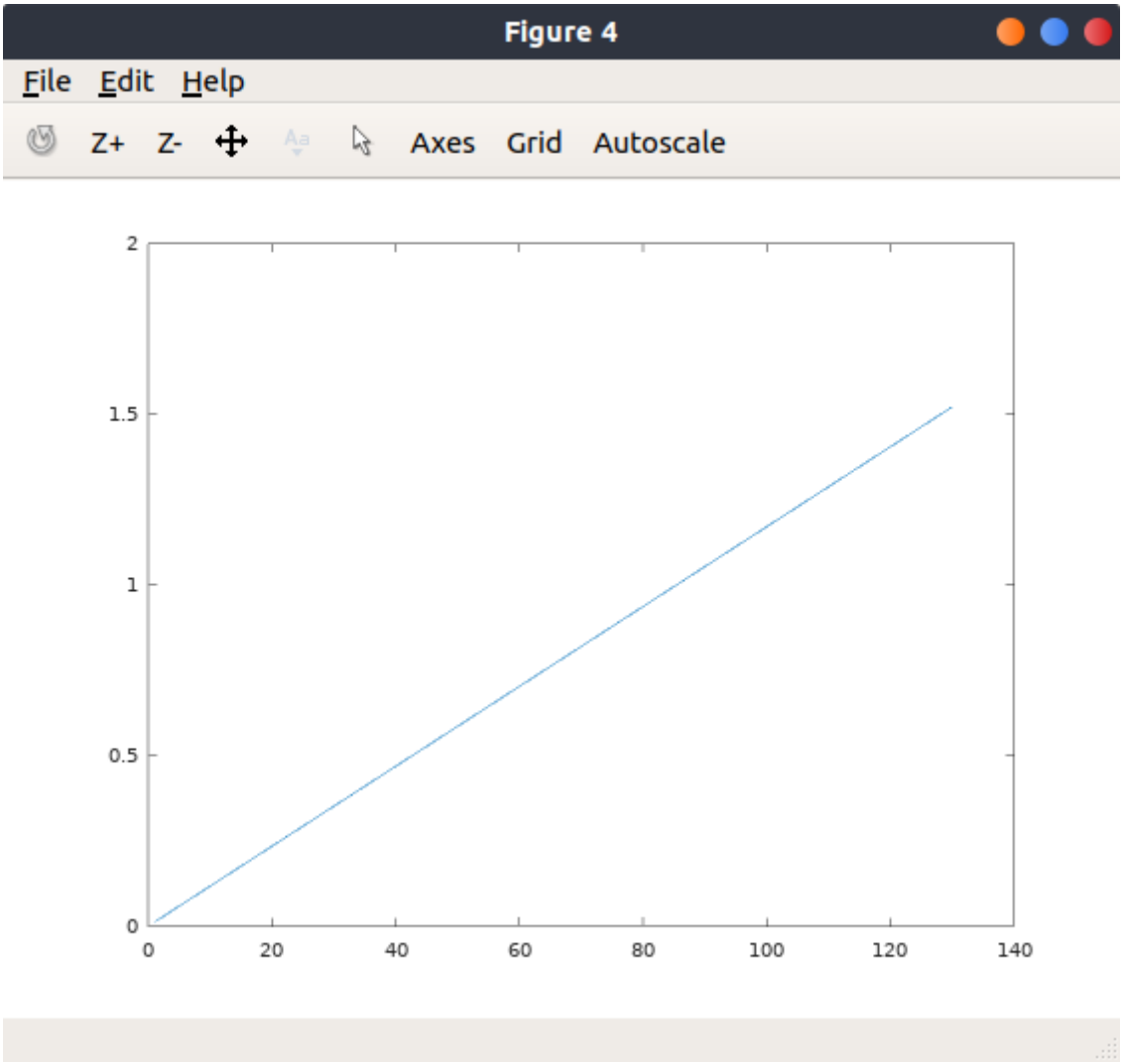
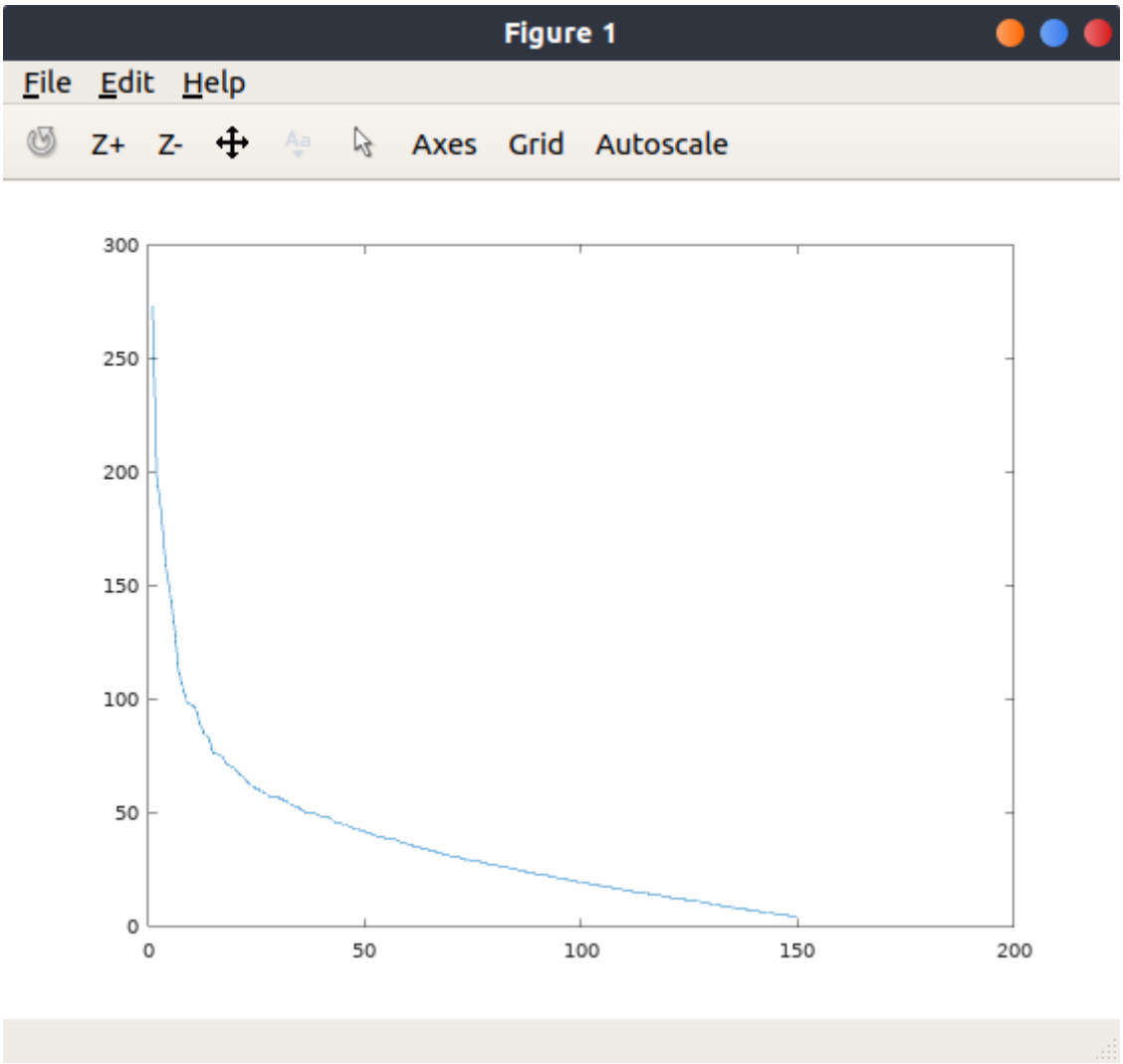


Figure 4
File Edit Help
Z+ Z- Axes Grid Autoscale
2
1.5
1
0.5
0
0 20 40 60 80 100 120 140

Task 3: Citesc sub forma de matrice imaginea data ca parametru si calculez, apoi, media aritmetica a fiecarei linii si o pun intr-un vector nou. La fiecare pas modific liniile matricei. Dupa aceea, calculez matricea Z si aplic descompunerea valorilor singulare pe aceasta. Adaug intr-o noua matrice W primele k coloane din matricea V obtinuta in urma aplicarii DVS. In final, calculez Y si, respectiv, A_k.

Task 4: Citesc sub forma de matrice imaginea data ca parametru si calculez, apoi, media aritmetica a fiecarei linii si o pun intr-un vector nou. La fiecare pas modific liniile matricei. Dupa aceea, calculez matricea Z si aflu valorile ei singulare. Initializez o noua matrice W si adaug in aceasta primele k valori din matricea vectorilor proprii V, obtinuta in urma aplicarii DVS. In final, calculez Y si, respectiv A_k.

Task 5 – Imaginea 2



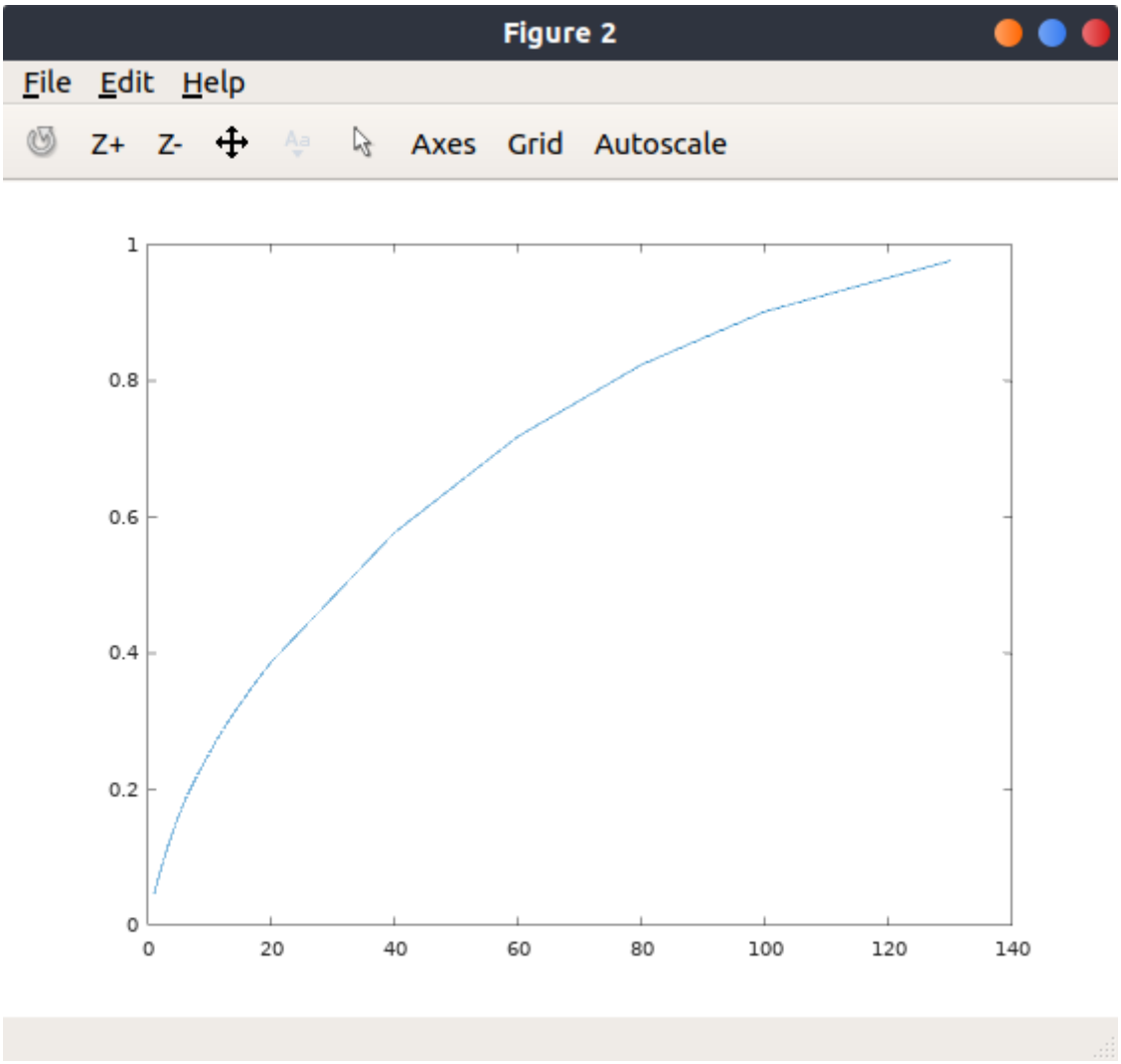


Figure 2
File Edit Help
Z+ Z- Axes Grid Autoscale
1
0.8
0.6
0.4
0.2
0
0 20 40 60 80 100 120 140

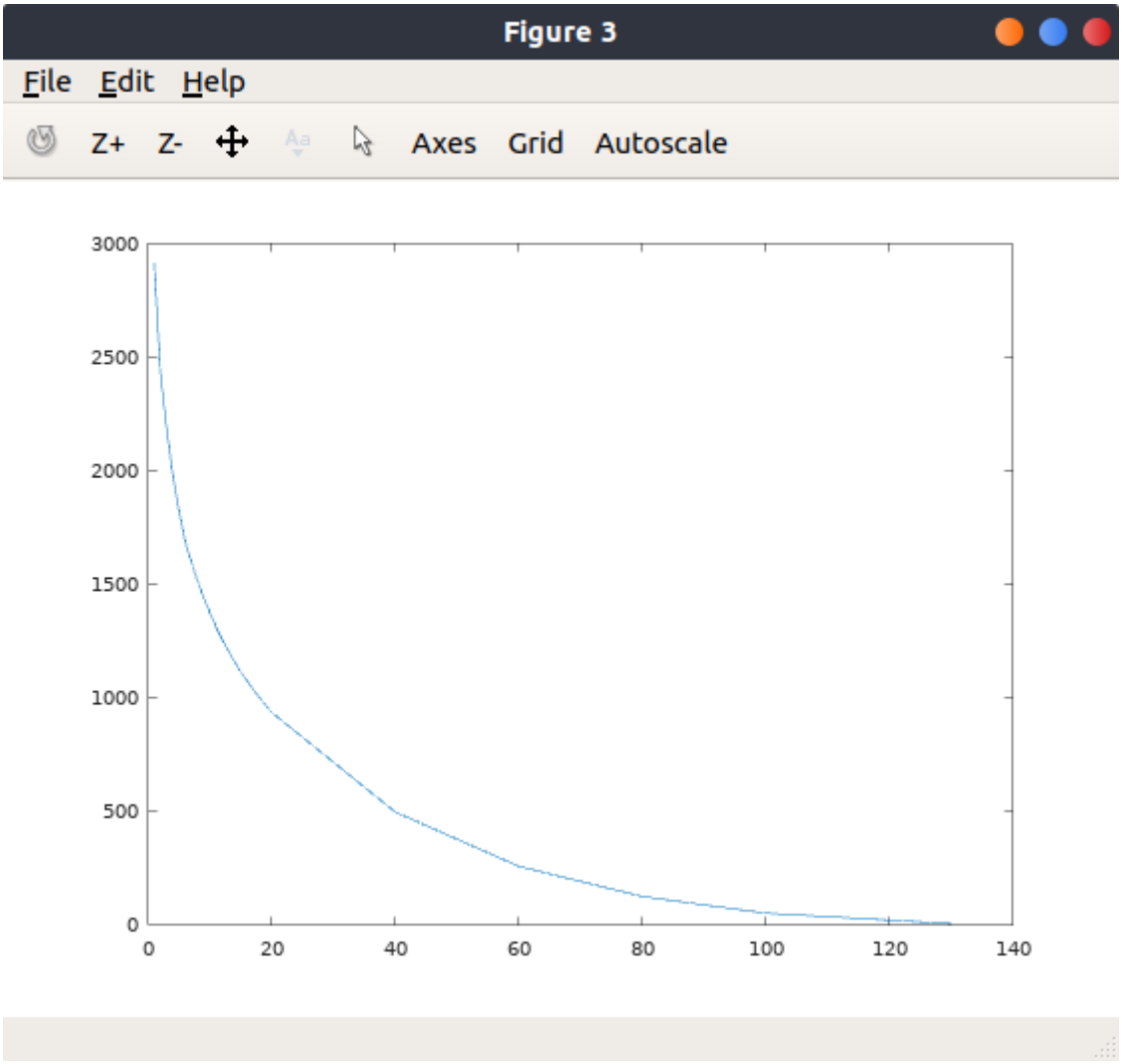


Figure 3
File Edit Help
Z+ Z- Axes Grid Autoscale
3000
2500
2000
1500
1000
500
0
0 20 40 60 80 100 120 140

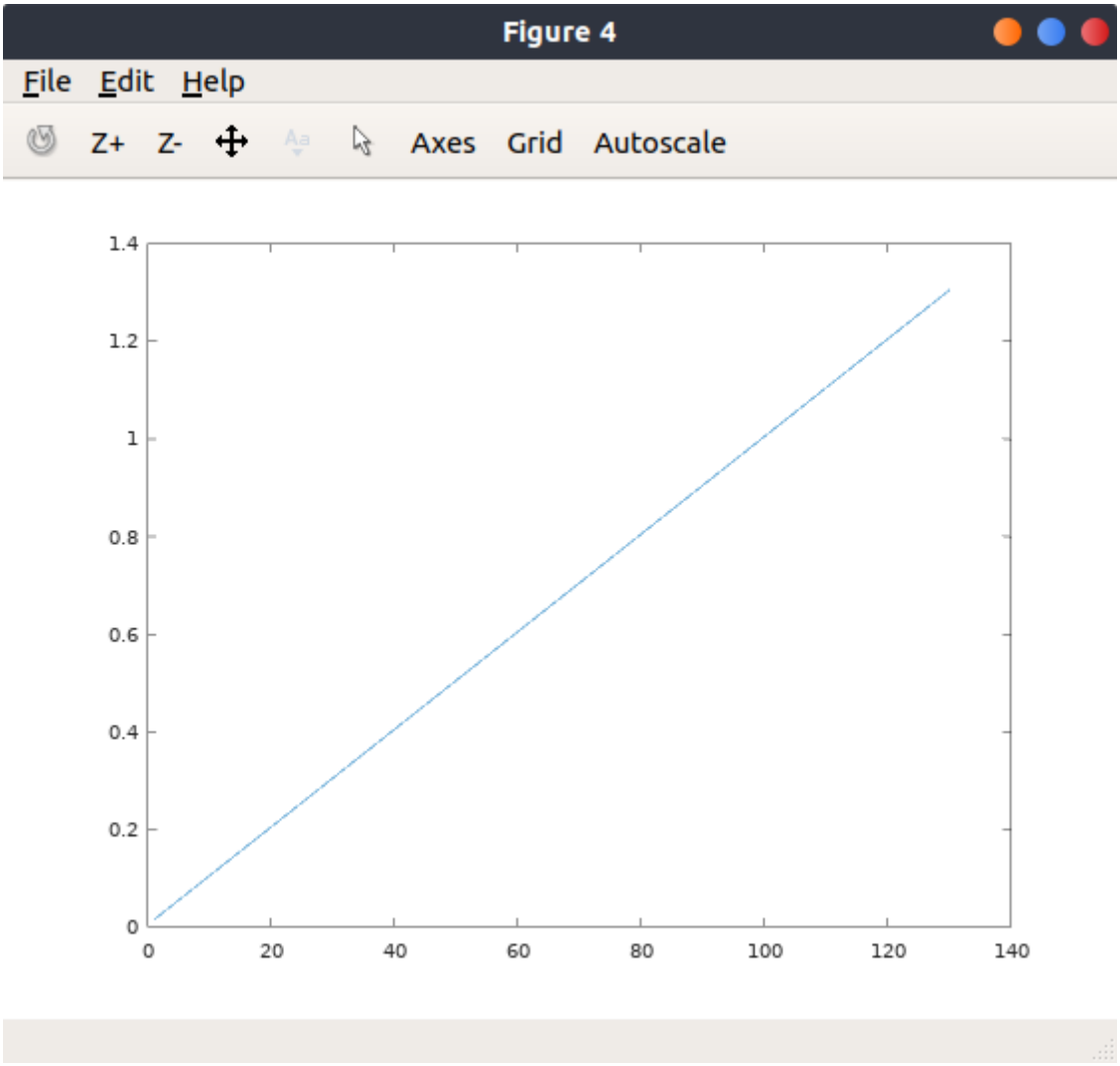
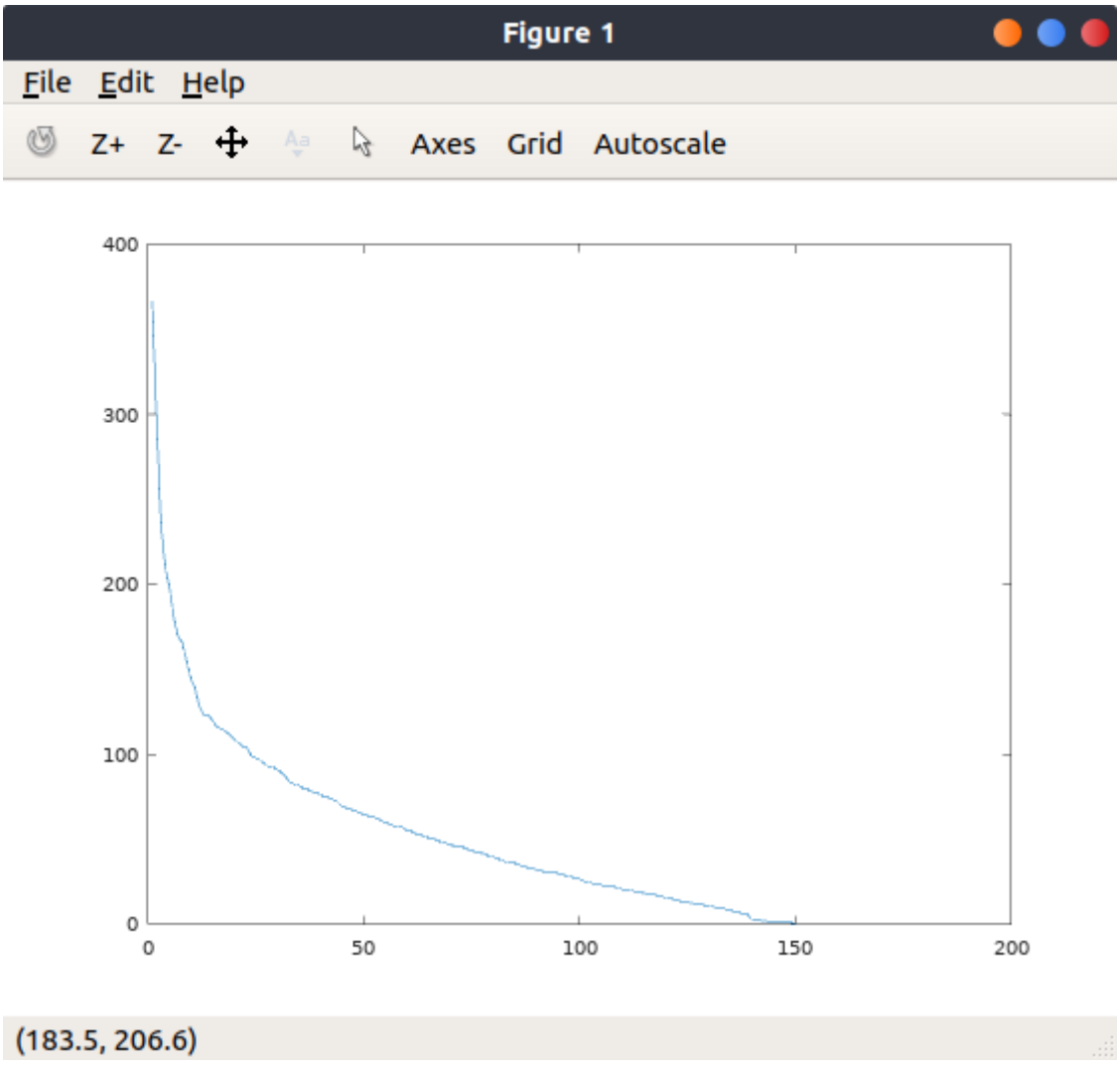


Figure 4
File Edit Help
Z+ Z- Axes Grid Autoscale
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0 20 40 60 80 100 120 140

Task 5 – Imaginea 4



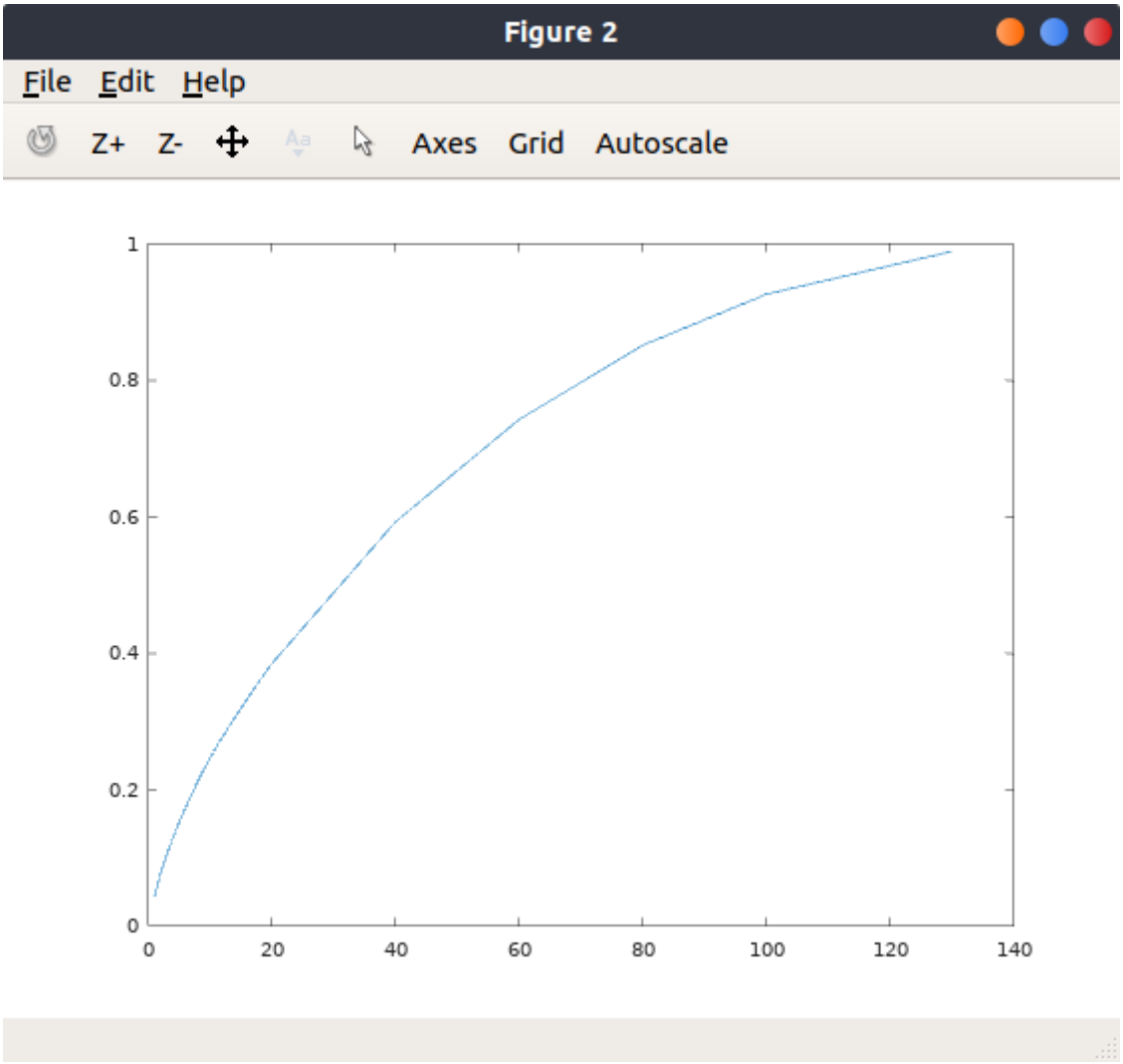


Figure 2
File Edit Help
Z+ Z- Axes Grid Autoscale
1
0.8
0.6
0.4
0.2
0
0 20 40 60 80 100 120 140

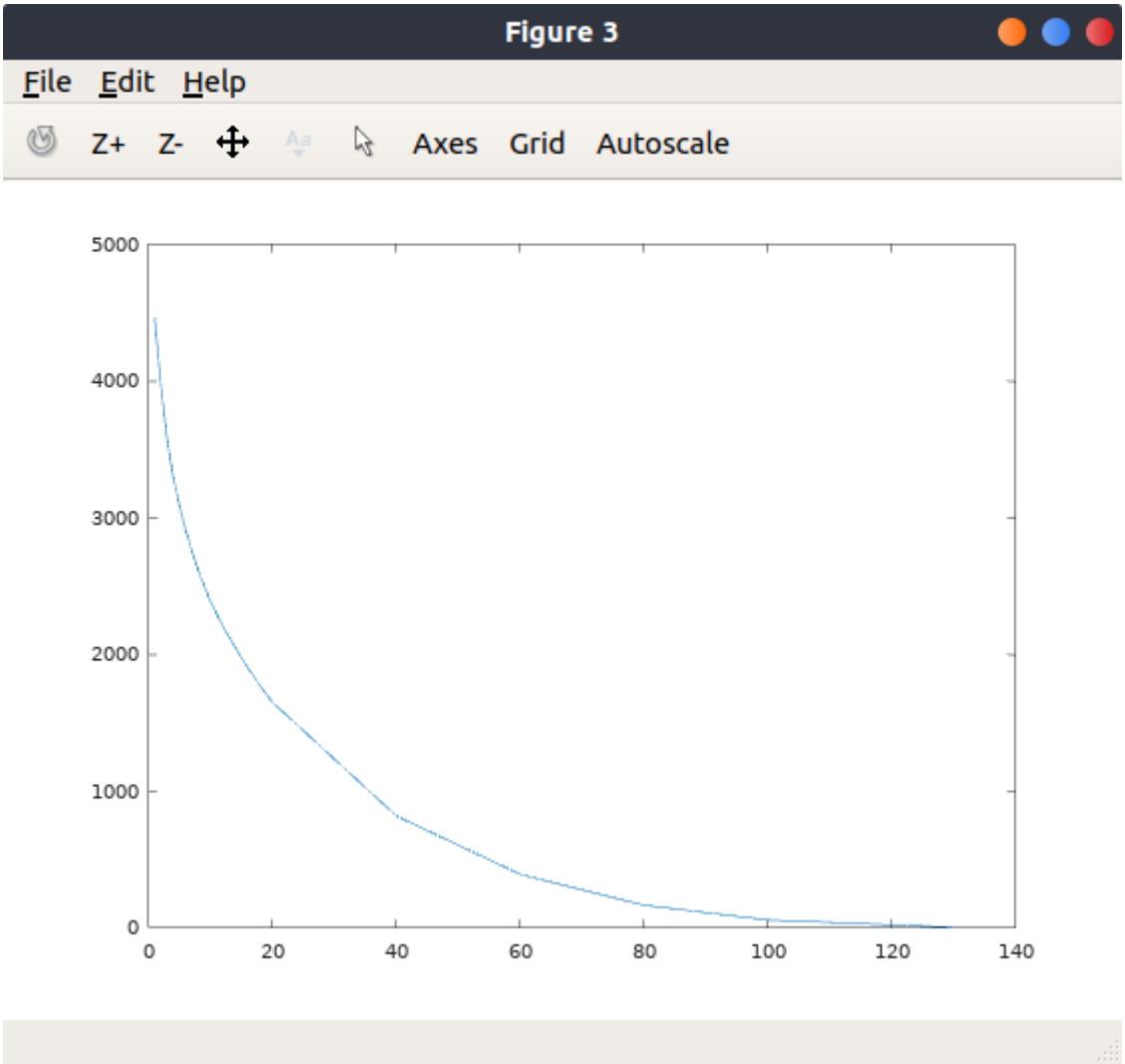


Figure 3
File Edit Help
Z+ Z- Axes Grid Autoscale
5000
4000
3000
2000
1000
0
0 20 40 60 80 100 120 140

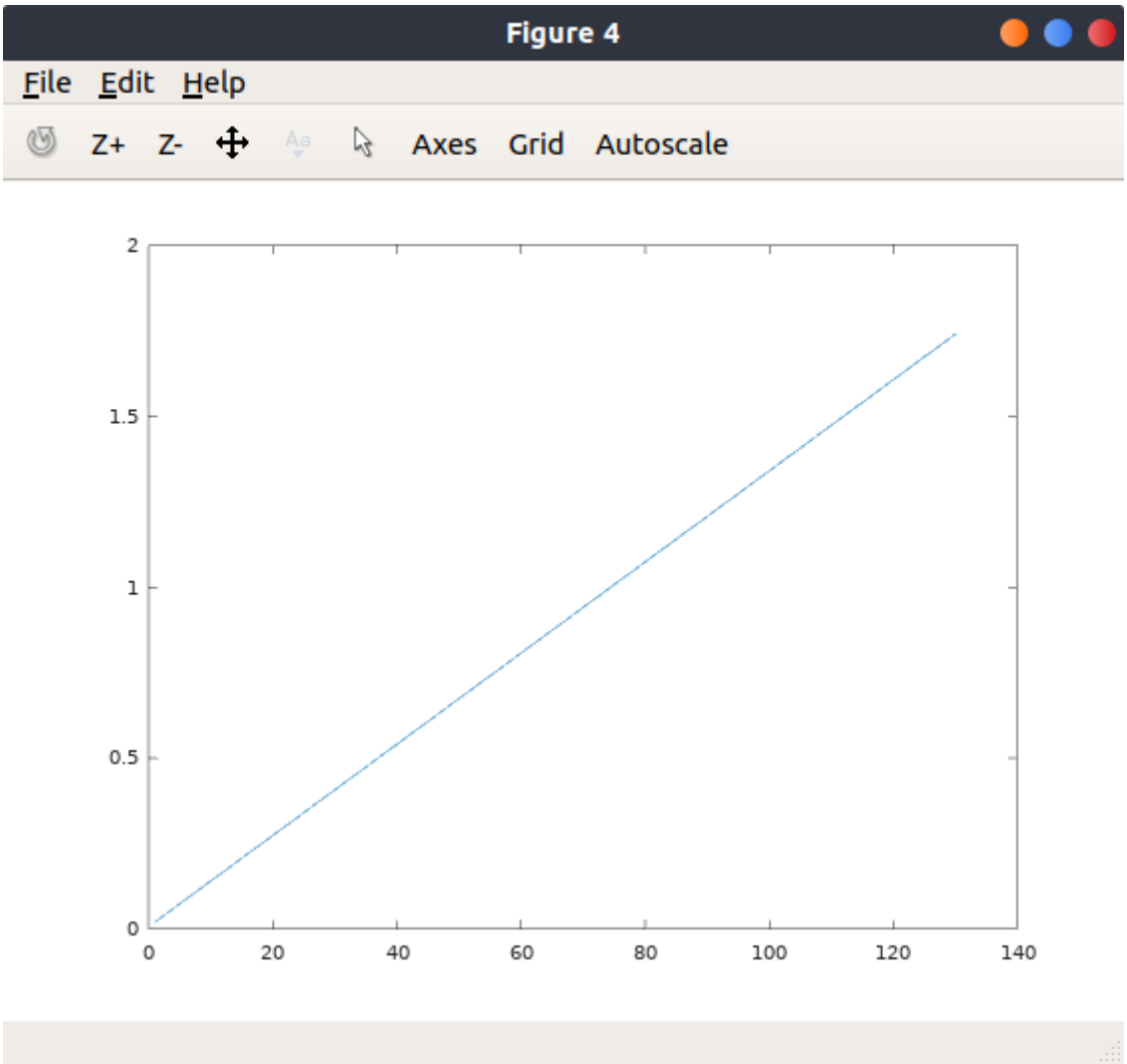


Figure 4
File Edit Help
Z+ Z- Axes Grid Autoscale
2
1.5
1
0.5
0
0 20 40 60 80 100 120 140

Eigenface core: Citesc directorul dat ca parametru functiei si retin numarul imaginilor aflate in acesta. Pentru fiecare poza din director construiesc vectorul coloana cu fiecare valoare a matricei respective. Apoi, construiesc matricea T cu toti vectorii coloana. Dupa aceea, construiesc un vector cu mediile aritmerice de pe fiecare linie a matricei T. Construiesc o matrice auxiliara si aplic DVS pe aceasta. Apoi, pun intr-o noua matrice V vectorii proprii corespunzatori valorilor proprii mai mari decat 1. In final, calculez matricea de proiectii ale imaginilor.

Face recognition: Citesc o matrice de test data ca parametru, apoi pun intr-un vector coloana toate valorile acesteia. Dupa aceea, calculez proiectia imaginii de test. Initializez distanta minima cu infinit(Inf) si indexul cu 0. Parcurg coloanele matricei si compar diferenta in modul dintre proiectii cu distanta minima, in caz afirmativ, actualizand distanta minima si indexul.