

# **RAPPORT PROJET TP**

## **( Interpolation des objets )**

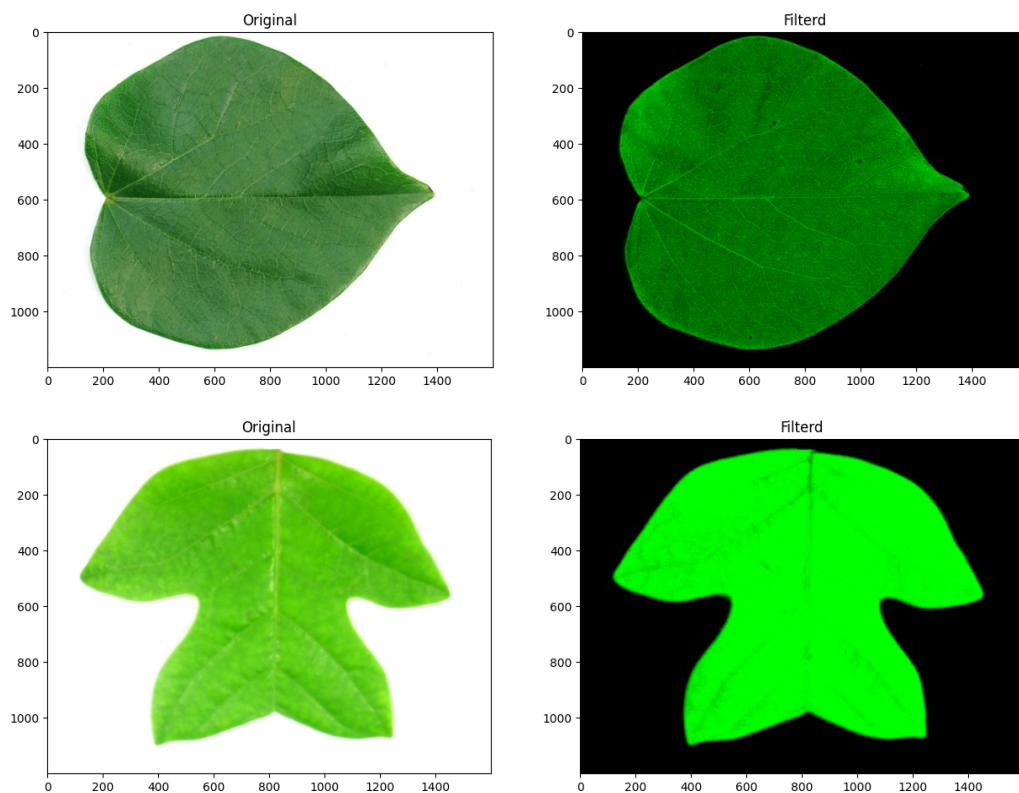
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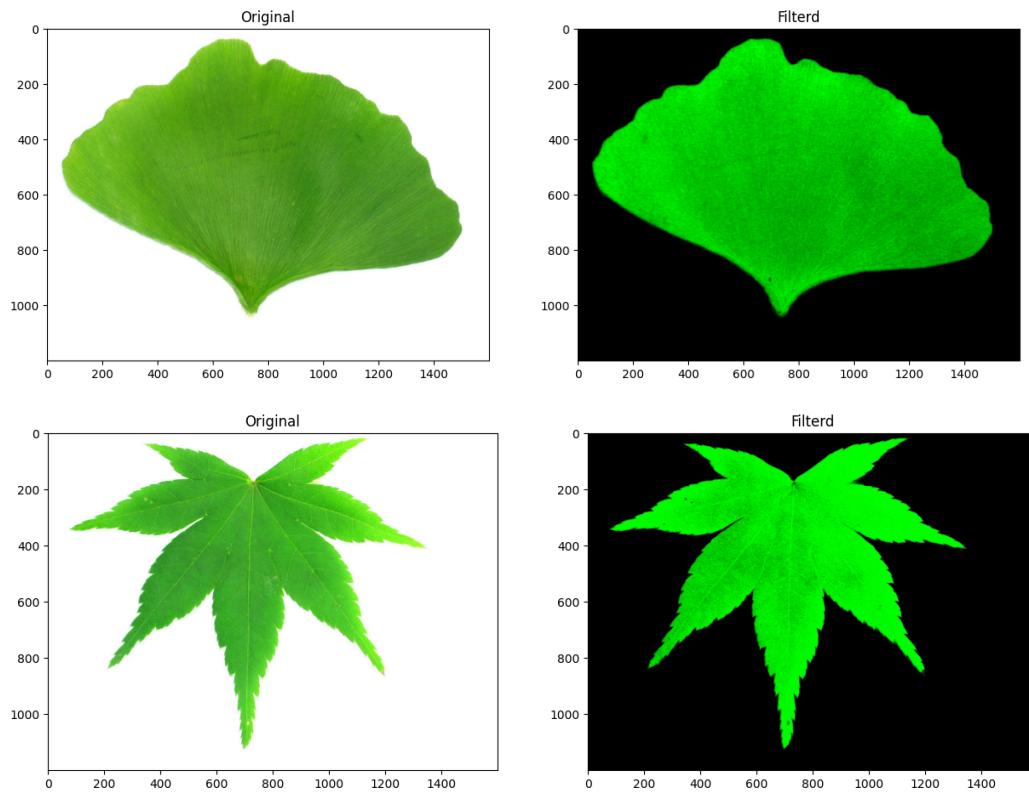
### **1 - PREPROCESSING :**

#### **1.1 . FILTRAGE AVEC LAPLACE**

Le filtrage d'image consiste à modifier ou améliorer une image en appliquant un filtre ou un ensemble de filtres aux pixels de l'image. Les filtres sont des opérations mathématiques appliquées à chaque pixel ou à un voisinage de pixels dans l'image pour obtenir divers effets tels que le flou, le renforcement, la détection de contours, la réduction du bruit, etc.

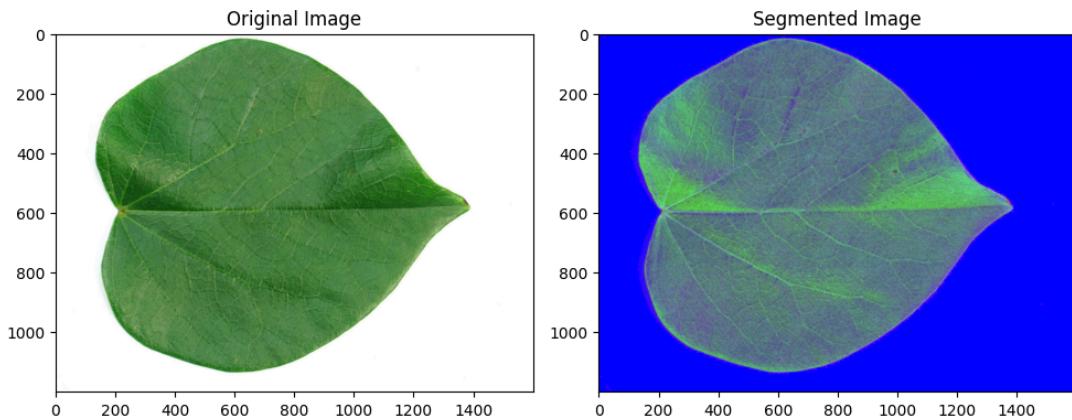
Laplace est souvent utilisée pour la détection des contours et des bords dans une image.

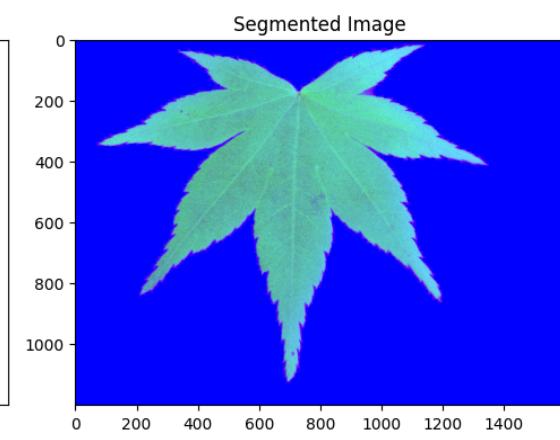
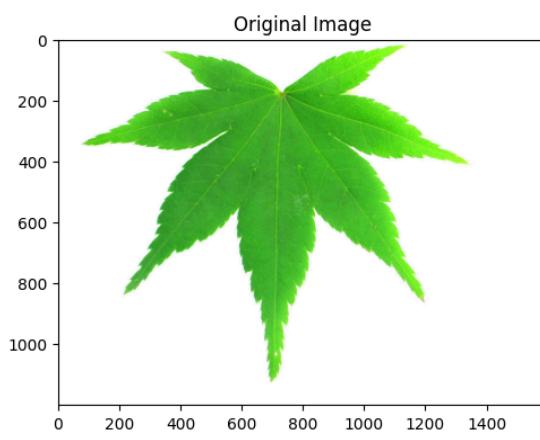
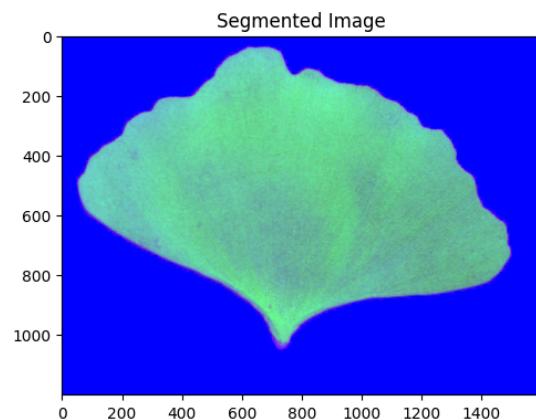
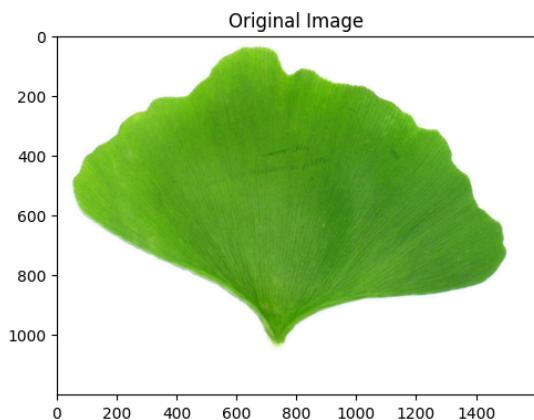
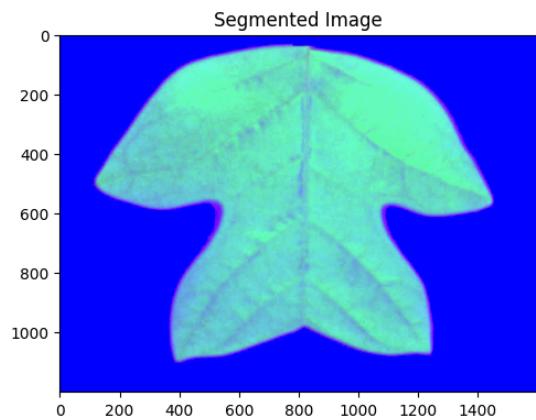
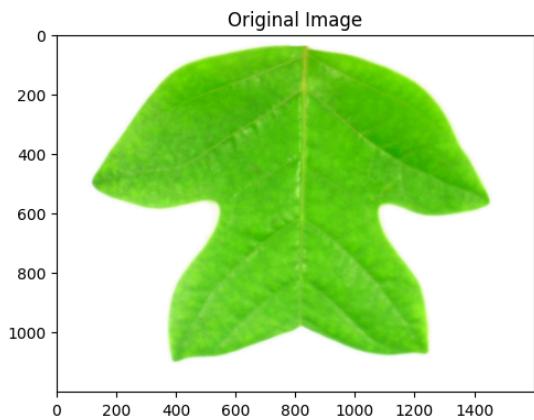




## 1.2. SEGMENTATION :

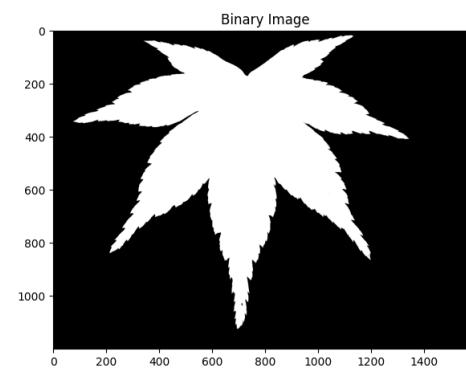
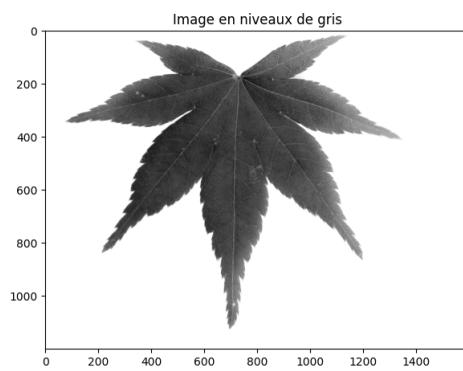
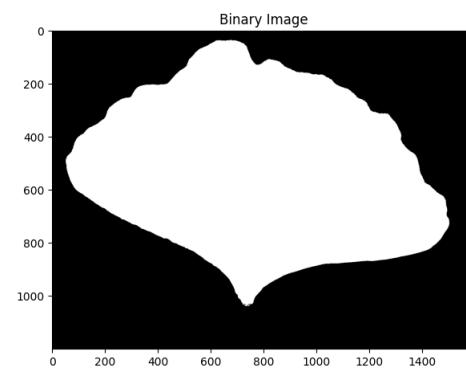
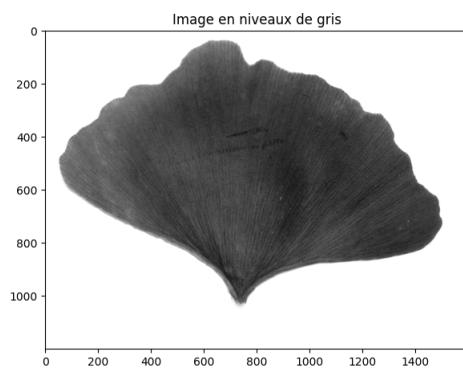
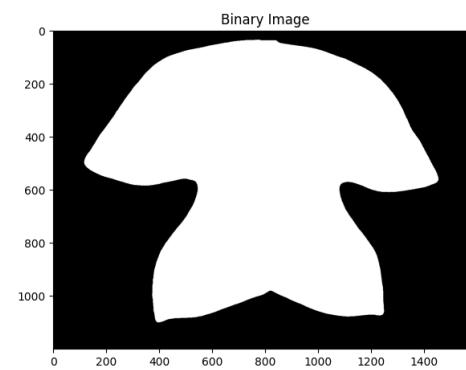
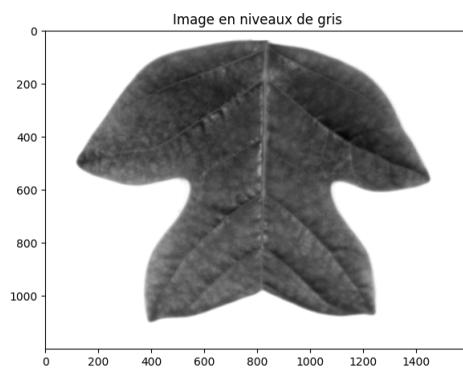
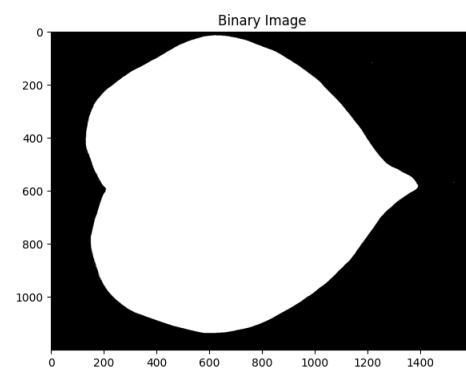
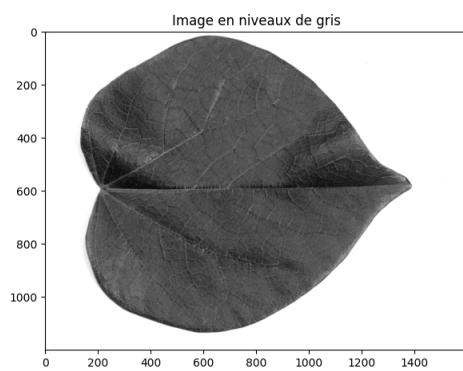
Le processus de diviser une image en plusieurs régions, le résultat est une image étiquetée où différentes régions de l'objet sont clairement identifiées par des étiquettes ou des couleurs uniques. Permettant une compréhension plus fine des éléments qui constituent l'image.





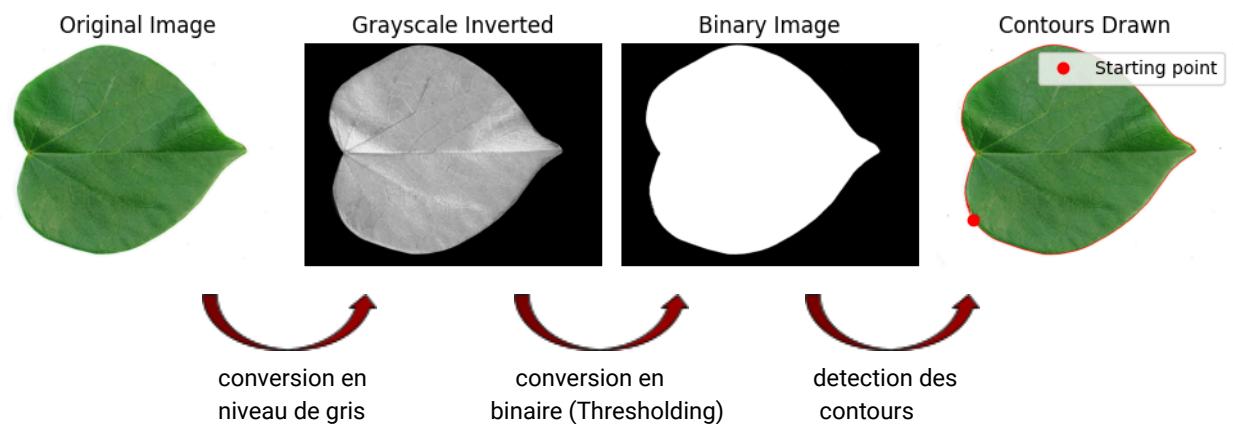
### 1.3 . Image en binaire et Image En Niveau De Gris :

image en binaire = segmentation en noir et blanc



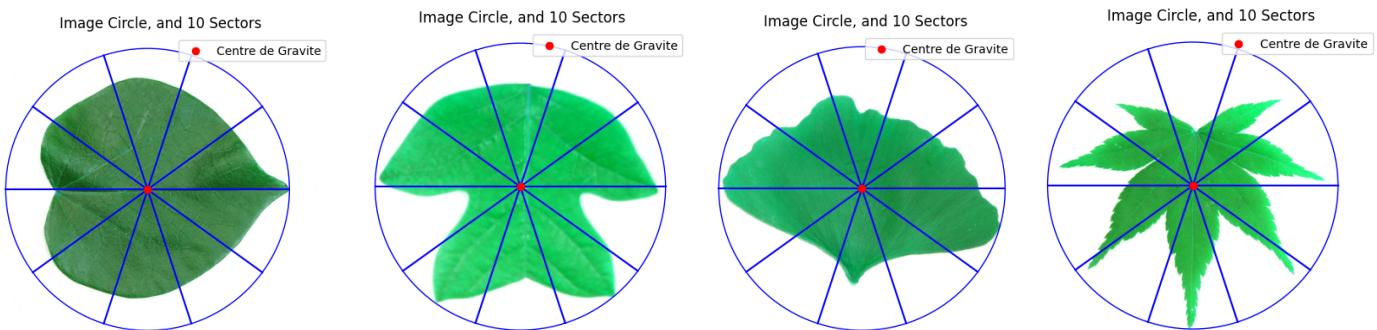
## 2 - FRONTIERES :

Comporte 3 etapes :



## 3 - DIVISION EN SECTEURS A L'AIDE D'UN CERCLE :

- 1) Déterminer le centre de gravité
- 2) Déterminer le cercle englobant toute la forme
- 3) Diviser le cercle en secteurs



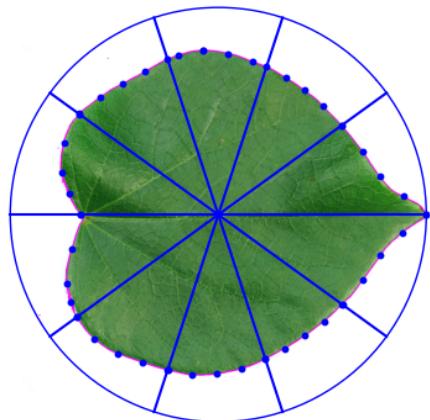
## 4 - CHOIX DES POINTS D'INTERPOLATION :

J'ai essayé avec :

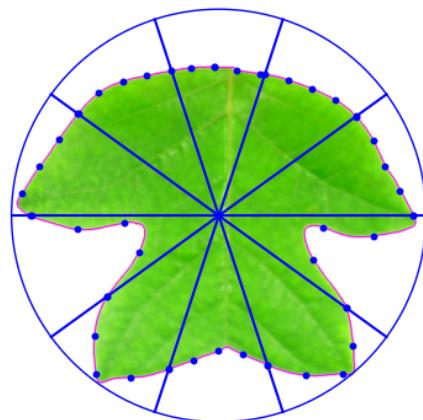
- 6 points : **Les quatrs quartils et Les deux points d'intersection du secteur avec le contour**
- 3 points : **Les deux points d'intersection du secteur avec le contour et le milieu entre eux**

Les résultats du premier choix sont meilleurs

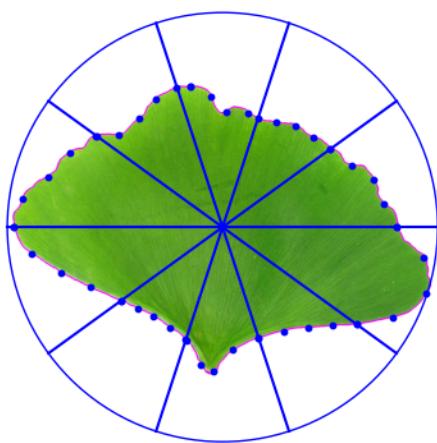
Contours, Sectors, and Points in Each Sector



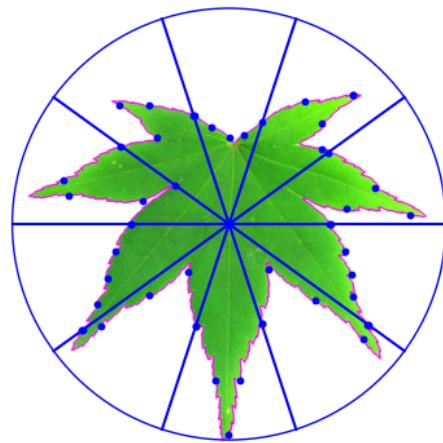
Contours, Sectors, and Points in Each Sector



Contours, Sectors, and Points in Each Sector



Contours, Sectors, and Points in Each Sector



## 5 - L'INTERPOLATION :

Interpoler/approximer chaque secteur individuellement

IMAGE 1 :

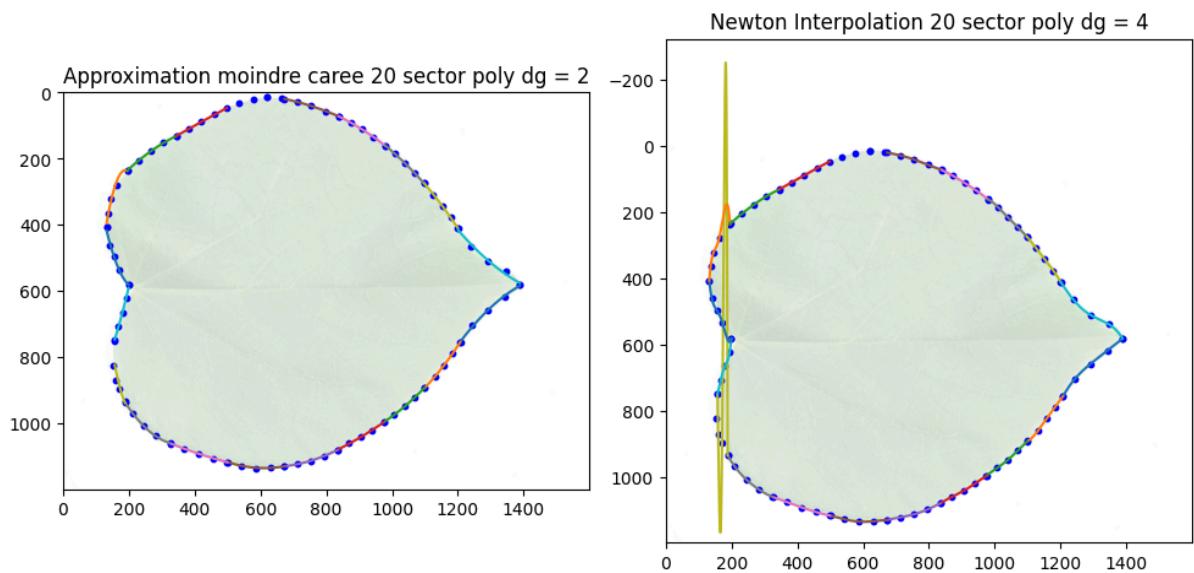
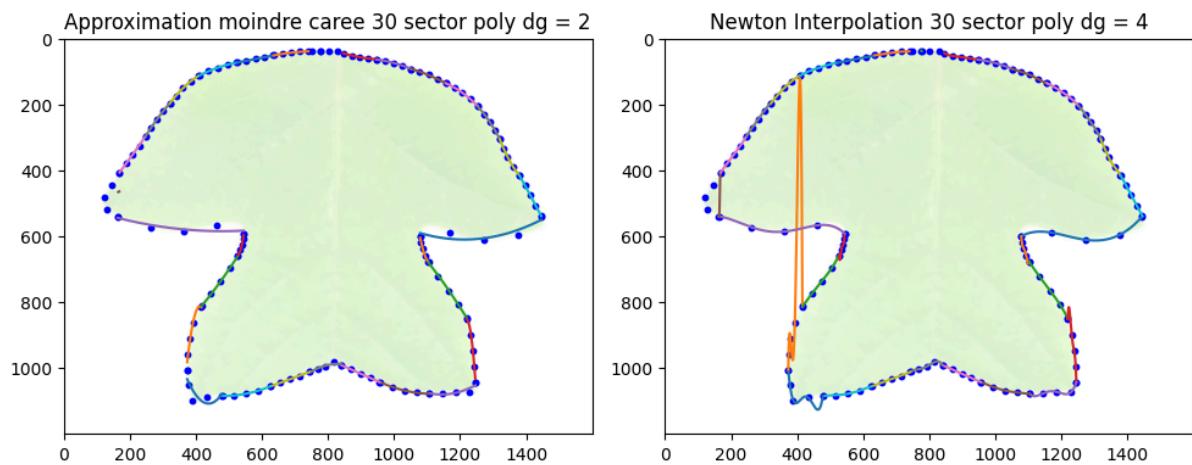
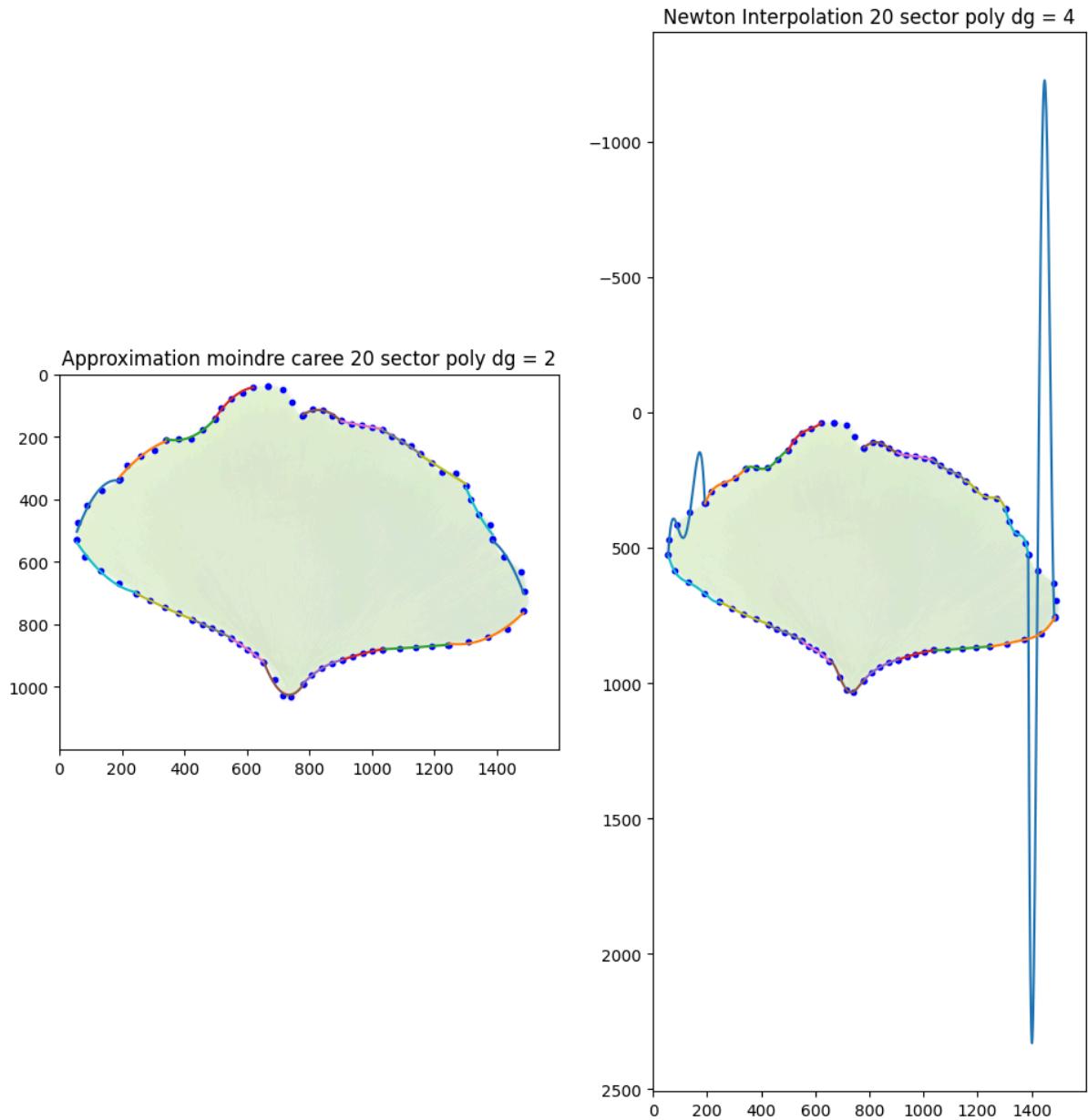


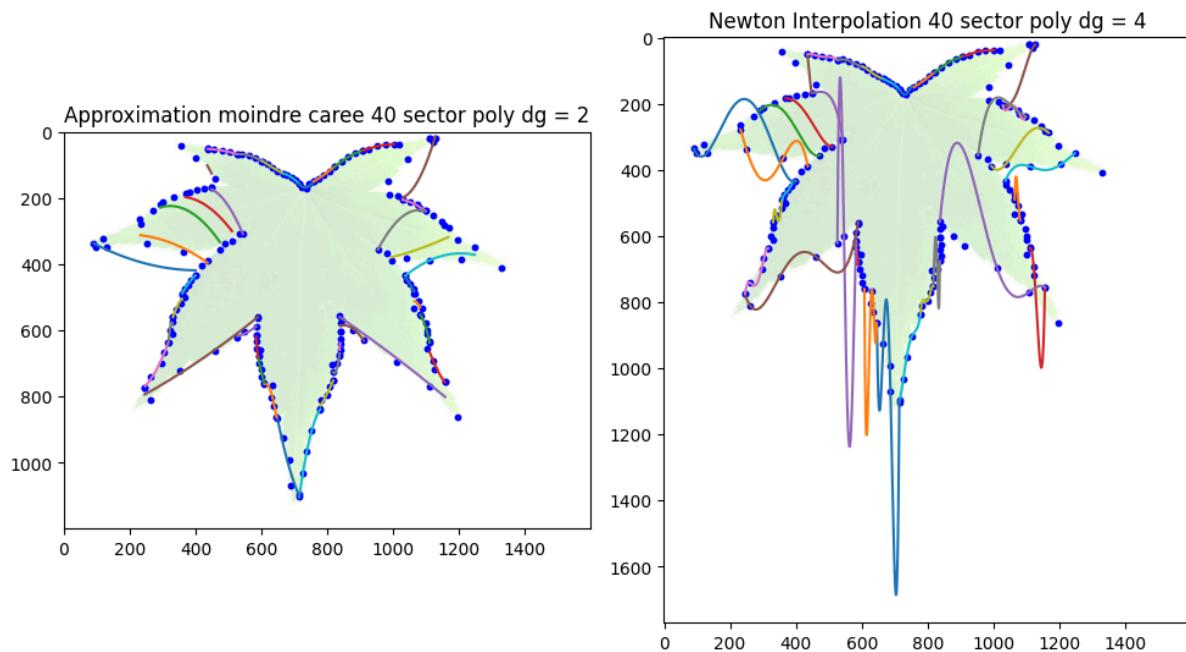
IMAGE 2 :



### IMAGE 3 :



#### IMAGE 4 :



## 6 - L'ERREUR :

Image 1 :

Method	L_inf Norm	L_1 Norm	L_2 Norm
Image 1 (Polyfit)	6.07016	314.373	29.7966
Image 1 (Newton)	20.5667	2353.19	189.358
Image 1 (Polyfit)	2.61903	110.084	12.035
Image 1 (Newton)	8.68224	611.271	60.1407
Image 1 (Polyfit)	2.08521	80.4217	8.81156
Image 1 (Newton)	6.70968	442.161	44.5951
Image 1 (Polyfit)	1.82247	61.5824	6.64352
Image 1 (Newton)	3.99281	254.417	25.1276
Image 1 (Polyfit)	1.311	75.6913	7.1637
Image 1 (Newton)	9.08696	856	73.9286
Image 1 (Polyfit)	1.43979	86.4458	8.14018
Image 1 (Newton)	12.1387	1244	104.624
Image 1 (Polyfit)	0.91909	51.6077	4.77644
Image 1 (Newton)	3.42197	312.017	26.7723
Image 1 (Polyfit)	4.78808	148.093	15.0875
Image 1 (Newton)	21.9051	2328.05	198.99
Image 1 (Polyfit)	60.505	7393.35	482.022

Image 1 (Newton)	114.065	20672.6	1245.13	
Image 1 (Polyfit)	112.38	2707.04	426.433	
Image 1 (Newton)	51.8095	2458.83	268.072	
Image 1 (Polyfit)	20.4684	1599.92	122.31	
Image 1 (Newton)	38.7612	5684.67	395.748	
Image 1 (Polyfit)	15.8566	994.273	93.6886	
Image 1 (Newton)	51.1429	5724.43	480.681	
Image 1 (Polyfit)	2.26943	86.8067	9.69613	
Image 1 (Newton)	8.80405	860.041	75.144	
Image 1 (Polyfit)	1.45963	77.5759	7.68179	
Image 1 (Newton)	2.01961	101.941	10.1547	
Image 1 (Polyfit)	2.11561	130.073	12.5365	
Image 1 (Newton)	32	1701	175.94	
Image 1 (Polyfit)	1.51864	84.5861	7.92368	
Image 1 (Newton)	6.22424	470.188	43.7851	
Image 1 (Polyfit)	1.56315	77.9192	7.9737	
Image 1 (Newton)	5.25714	438.8	40.2052	
Image 1 (Polyfit)	1.38721	66.8022	7.44233	
Image 1 (Newton)	6.58974	380.453	40.1377	
Image 1 (Polyfit)	2.1844	81.1667	8.96856	
Image 1 (Newton)	7	418.333	41.501	
Image 1 (Polyfit)	6.25673	495.155	41.0054	
Image 1 (Newton)	24.0909	2506.73	200.315	

## Image 2 :

Image 2 (Polyfit)	34.7471	3890.47	253.665	
Image 2 (Newton)	46.4687	12479.6	682.989	

Image 2 (Polyfit)	5.32781	126.075	18.3948	
Image 2 (Newton)	16.3333	672.542	85.0647	
Image 2 (Polyfit)	4.0783	238.143	21.5831	
Image 2 (Newton)	9.41379	602.362	58.1657	
Image 2 (Polyfit)	24.0878	1423.2	127.081	
Image 2 (Newton)	50.1538	5959.38	479.133	
Image 2 (Polyfit)	18.1768	988.218	96.4517	
Image 2 (Newton)	28.5177	2165.75	197.522	
Image 2 (Polyfit)	1.24356	59.231	5.98061	
Image 2 (Newton)	8.12245	699.571	63.522	
Image 2 (Polyfit)	1.20788	50.2185	5.6589	
Image 2 (Newton)	1.38261	54.0261	6.10712	
Image 2 (Polyfit)	3.53458	163.297	18.6936	
Image 2 (Newton)	14.4688	569.5	71.6852	
Image 2 (Polyfit)	1.07385	41.4381	4.69743	
Image 2 (Newton)	1.58974	60.3932	6.94217	
Image 2 (Polyfit)	1.44139	72.023	7.1216	
Image 2 (Newton)	8.91781	756.705	70.4215	
Image 2 (Polyfit)	34.8779	2371.72	230.377	
Image 2 (Newton)	80.1143	7380.71	638.9	
Image 2 (Polyfit)	33.7467	2102.62	191.594	
Image 2 (Newton)	68.814	8295.95	657.916	
Image 2 (Polyfit)	2.60079	118.568	11.8348	
Image 2 (Newton)	8.85321	546.734	55.4014	
Image 2 (Polyfit)	12.0588	175.71	30.5034	
Image 2 (Newton)	15.5294	591.176	81.5407	
Image 2 (Polyfit)	17.34	2711.2	163.897	

Image 2 (Newton)	25.555	6144.36	341.484	
Image 2 (Polyfit)	69.8889	5250.8	481.685	
Image 2 (Newton)	2115	173528	16511.2	
Image 2 (Polyfit)	2.55192	73.2145	9.00064	
Image 2 (Newton)	2.79487	117.436	13.5137	
Image 2 (Polyfit)	1.85085	59.7482	7.23229	
Image 2 (Newton)	5.09589	284.137	30.082	
Image 2 (Polyfit)	1.62262	60.0595	7.38276	
Image 2 (Newton)	8.16092	504.241	56.4652	
Image 2 (Polyfit)	1.2358	46.5905	5.34438	
Image 2 (Newton)	5.61404	374.632	38.1889	
Image 2 (Polyfit)	1.58918	50.8603	6.02877	
Image 2 (Newton)	1.2	37.8	4.53872	
Image 2 (Polyfit)	1.26802	37.9734	4.75555	
Image 2 (Newton)	2.94286	169.229	18.3373	
Image 2 (Polyfit)	7.24051	114.661	16.6284	
Image 2 (Newton)	63	2952	343.307	
Image 2 (Polyfit)	2.23269	58.1057	7.52934	
Image 2 (Newton)	4.61386	253	28.1392	
Image 2 (Polyfit)	1.0915	34.6615	4.2389	
Image 2 (Newton)	4.68932	268	29.1148	
Image 2 (Polyfit)	1.78517	59.139	7.00911	
Image 2 (Newton)	4.08654	156.808	18.6029	
Image 2 (Polyfit)	1.56271	64.4282	7.95741	
Image 2 (Newton)	8.0625	469.219	51.4014	
Image 2 (Polyfit)	2.82118	70.0036	8.82453	
Image 2 (Newton)	9.32836	550.373	59.7376	

Image 2 (Polyfit)	4.07237	143.204	16.4614	
Image 2 (Newton)	11.2712	614.881	68.6296	
Image 2 (Polyfit)	2.93161	101.356	11.4667	
Image 2 (Newton)	2.63636	105.591	11.5251	

### Image 3 :

Image 3 (Polyfit)	158.626	12376.6	1001.92	
Image 3 (Newton)	113.71	13570.1	1044.13	
Image 3 (Polyfit)	4.07239	501.436	35.7771	
Image 3 (Newton)	39.4	5786.2	409.479	
Image 3 (Polyfit)	1.84295	119.208	10.2463	
Image 3 (Newton)	2.21531	179.115	14.5778	
Image 3 (Polyfit)	1.04178	44.6142	4.81093	
Image 3 (Newton)	3.07752	205.109	20.3008	
Image 3 (Polyfit)	3.06418	129.925	13.7688	
Image 3 (Newton)	12.208	1065.86	100.957	
Image 3 (Polyfit)	13.4134	1095.17	87.1961	
Image 3 (Newton)	76.252	10155.7	762.721	
Image 3 (Polyfit)	3.10666	93.9668	12.2992	
Image 3 (Newton)	5.86275	241.961	29.4616	
Image 3 (Polyfit)	4.43535	128.507	17.1101	
Image 3 (Newton)	3.38525	192.189	20.2959	
Image 3 (Polyfit)	3.07651	146.974	14.0322	
Image 3 (Newton)	4.11667	275.333	23.6784	
Image 3 (Polyfit)	9.48213	1053.86	79.2899	
Image 3 (Newton)	43.2169	5513.42	408.495	
Image 3 (Polyfit)	40.1682	2326.97	212.792	
Image 3 (Newton)	67.3088	8906.76	659.982	

Image 3 (Polyfit)	14.4656	854.021	81.1879	
Image 3 (Newton)	24.4054	2042.82	188.286	
Image 3 (Polyfit)	7.33976	546.485	50.7431	
Image 3 (Newton)	32.8344	2590.63	242.791	
Image 3 (Polyfit)	9.41287	305.741	36.3242	
Image 3 (Newton)	22.9091	1712.89	168.774	
Image 3 (Polyfit)	149.158	3624.84	501.682	
Image 3 (Newton)	93	5526	599.813	
Image 3 (Polyfit)	6.22837	233.44	27.2011	
Image 3 (Newton)	26.2927	1907.32	199.285	
Image 3 (Polyfit)	3.7633	156.699	17.0933	
Image 3 (Newton)	5.3	284.054	30.3812	
Image 3 (Polyfit)	6.82749	238.228	28.1617	
Image 3 (Newton)	9.05882	451.992	49.5158	
Image 3 (Polyfit)	14.5328	953.288	89.9793	
Image 3 (Newton)	18.102	1303.14	118.881	
Image 3 (Polyfit)	19.558	1154	106.49	
Image 3 (Newton)	27.4941	2454.29	223.342	

#### Image 4 :

Image 4 (Polyfit)	54.9929	988.093	156.753	
Image 4 (Newton)	18.2308	538.192	78.0619	
Image 4 (Polyfit)	100.681	3614.32	456.475	
Image 4 (Newton)	56.1176	2537	290.589	
Image 4 (Polyfit)	67.3586	2137.24	274.544	
Image 4 (Newton)	27.6429	1043.21	127.086	
Image 4 (Polyfit)	89.04	5120.14	532.623	

Image 4 (Newton)	50.5435	3779.61	340.929	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	41.1076	11357.5	543.395	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	84.8563	21821.9	1045.84	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	58.6214	2714.27	275.418	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	46.6389	3280.89	313.045	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	569	3350.67	935.245	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	306	10947	1416.23	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	43.1095	1236.61	161.289	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	69.75	2243.75	306.912	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	27.8876	1306.55	139.402	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	31.2051	1139.67	131.42	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	77.3155	8864.83	561.949	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	109	13282.1	870.215	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	70.7033	10158	636.17	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	104.324	15635	993.886	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	38.7776	2739.84	261.379	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	65.8108	2614.7	317.653	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	15.6823	559.329	69.895	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	16.4444	592.778	75.8407	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	39.62	931.293	153.416	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	87	2268.43	325.858	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	74.2156	1947.11	266.266	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	54.1579	2367.33	280.259	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	32.9967	5670.35	317.397	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	52.2558	11883.6	602.217	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	57.476	1876.3	210.78	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	27.6429	1871.13	178.684	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+

Image 4 (Polyfit)	1207.07	12234.3	2680.72	
+-----+-----+-----+-----+				
Image 4 (Newton)	68.7692	2259.08	303.074	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	13.5317	407.598	56.4688	
+-----+-----+-----+-----+				
Image 4 (Newton)	45.2593	1151.48	178.322	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	4.07762	100.553	15.0015	
+-----+-----+-----+-----+				
Image 4 (Newton)	7	201.8	29.7274	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	21.4763	759.621	78.4452	
+-----+-----+-----+-----+				
Image 4 (Newton)	55.4175	2086.34	242.83	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	45.9525	10911.9	572.18	
+-----+-----+-----+-----+				
Image 4 (Newton)	133.721	28268.5	1427.08	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	26.0492	1596.53	129.697	
+-----+-----+-----+-----+				
Image 4 (Newton)	105.348	8326.56	728.985	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	18.6563	1013.78	100.156	
+-----+-----+-----+-----+				
Image 4 (Newton)	112.695	7022.6	669.405	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	18.0578	200.372	38.8438	
+-----+-----+-----+-----+				
Image 4 (Newton)	131.768	5349.53	684.02	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	303.857	14590.9	1408.56	
+-----+-----+-----+-----+				
Image 4 (Newton)	843.231	110697	7387.42	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	5.14895	121.525	17.1345	
+-----+-----+-----+-----+				
Image 4 (Newton)	5.14286	247.505	27.8505	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	4.83563	122.096	16.9741	
+-----+-----+-----+-----+				
Image 4 (Newton)	7.36986	359	42.9268	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	1.40364	29.7207	4.58647	
+-----+-----+-----+-----+				
Image 4 (Newton)	2.39683	64.254	9.84053	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	1.012	16.1531	2.83565	
+-----+-----+-----+-----+				
Image 4 (Newton)	4.33333	130.667	20.79	
+-----+-----+-----+-----+				
Image 4 (Polyfit)	2.65633	63.7595	10.1019	
+-----+-----+-----+-----+				

Image 4 (Newton)	19.4545	521.818	84.1275	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	1.01481	20.0845	3.1576	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	1.85246	54.8197	7.86984	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	1.66393	61.2451	7.66288	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	7	320	38.4998	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	7.42254	191.034	24.4296	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	7.8	319.4	35.6275	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	789.82	48692.9	4186.03	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	165	25404	1675.71	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	42.8773	1163.08	137.661	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	143.918	5510.18	715.945	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	8.13399	263.32	33.119	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	8.44928	434.841	49.6906	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	15.3493	571.148	69.9433	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	102.869	5640.19	613.332	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	179.853	6445.85	707.315	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	107.121	9372.04	749.701	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Polyfit)	54.6853	8741.8	465.744	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+
Image 4 (Newton)	96.5829	18438.3	1005.1	
+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+	+-----+-----+-----+-----+