

a.

```
(x0, y0): (0.2, 0.312474)
(x1, y1): (0.4, 1.10164)
(x2, y2): (0.6, 3.35109)
(x3, y3): (0.8, 9.93367)
(x4, y4): (1, 28)
(x5, y5): (1.2, 72.9982)
(x6, y6): (1.4, 174.776)
(x7, y7): (1.6, 386.219)
(x8, y8): (1.8, 794.872)
(x9, y9): (2, 1538)
(x10, y10): (2.2, 2821.54)
(x11, y11): (2.4, 4943.38)
(x12, y12): (2.6, 8321.47)
(x13, y13): (2.8, 13527.1)
(x14, y14): (3, 21324)
```

b. Result 1:

```
0.0000013803
0.9999871727
2.0000408320
2.9999388452
4.0000484362
4.9999791448
6.000046096
6.999995907
```

Result 2:

```
0.0000000010
0.9999999899
2.0000000330
2.9999999496
4.0000000405
4.9999999824
6.000000039
6.999999996
```

Result 3:

```
0.0000000000
1.0000000000
2.0000000000
3.0000000000
4.0000000000
5.0000000000
6.0000000000
7.0000000000
```

c.

Result 1:

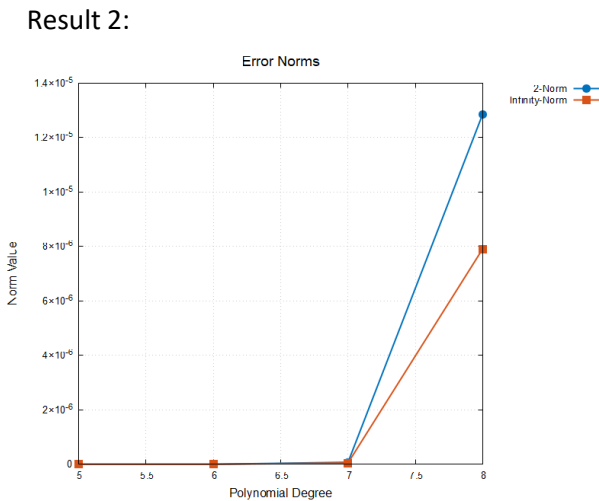
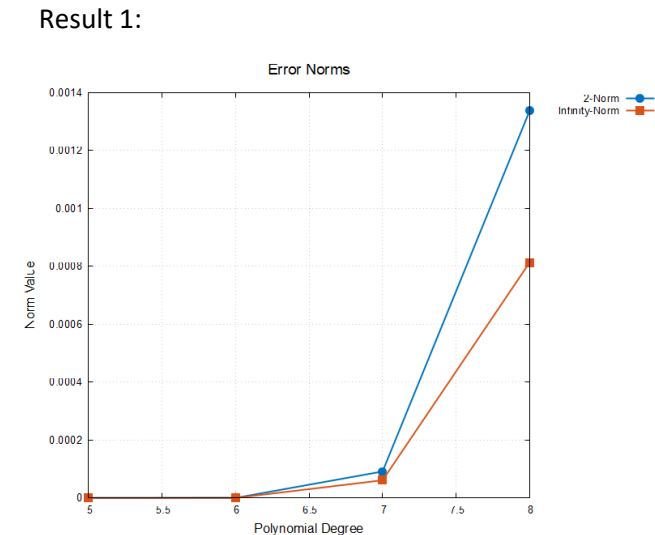
Degree	2-Norm	Infinity-Norm
5	0.000000018661638	0.000000013299678
6	0.000000309023639	0.000000206475796
7	0.000091520659431	0.000061154819770
8	0.001336375460754	0.000812994670626

Result 2:

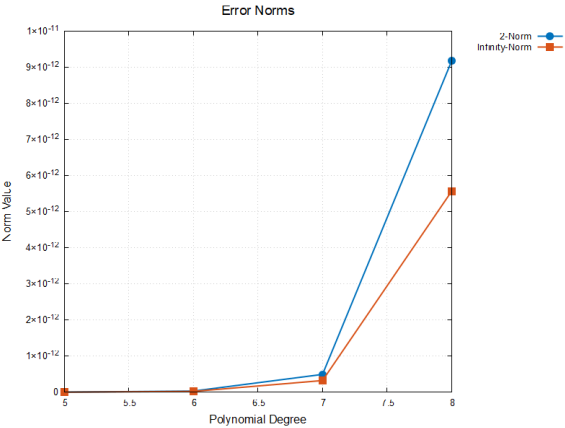
Degree	2-Norm	Infinity-Norm
5	0.000000000001000	0.000000000000686
6	0.000000001341164	0.000000000877325
7	0.000000075421734	0.000000050365109
8	0.000012854642400	0.000007908406617

Result 3:

Degree	2-Norm	Infinity-Norm
5	0.0000000000000002	0.0000000000000002
6	0.0000000000000033	0.0000000000000023
7	0.0000000000000494	0.0000000000000324
8	0.0000000000009170	0.0000000000005564



c. Result 3:



d.

Result 1:

```
Degree 5: 0.000000001102691 0.999999992971881 2.000000013299678 2.999999989610215 4.000000003552893 4.99999999559277
Relative Error: 0.00000001306576
Degree 6: 0.000000009095031 0.999999928003909 2.000000182860740 2.999999793524204 4.000000114881932 4.99999969159811 6.000000003189471
Relative Error: 0.00000021635982
Degree 7: 0.000001380287518 0.999987172700050 2.000040831974470 2.999938845180230 4.000048436240036 4.999979144810826 6.000004609595481 6.999999590695757
Relative Error: 0.000006407727834
Degree 8: 0.000011938852251 0.999877928222653 2.000448061392871 2.999190965360204 4.000812994670626 4.999523137336716 6.000162225328857 6.999970355376992 8.000002249848913
Relative Error: 0.000093564997124
```

Result 2:

```
Degree 5: 0.000000000000026 0.99999999999724 2.000000000000686 2.999999999999372 4.000000000000238 4.999999999999968
Relative Error: 0.00000000000070
Degree 6: 0.00000000046610 0.99999999654352 2.000000000822234 2.99999999122675 4.00000000465545 4.99999999879874 6.00000000012017
Relative Error: 0.00000000093900
Degree 7: 0.00000001048280 0.999999989918825 2.000000032976477 2.99999949634891 4.000000040453362 4.999999982402879 6.00000003919322 6.99999999649948
Relative Error: 0.00000005280578
Degree 8: -0.000000105949786 1.000001102889557 1.999995856078247 3.000007674180163 3.999992091593383 5.000004751576083 5.999998346809568 7.00000308437146 7.999999976140986
Relative Error: 0.00000900004987
```

Result 3:

```
Degree 5: 0.000000000000000 0.999999999999999 2.000000000000002 2.999999999999998 4.000000000000001 5.000000000000000
Relative Error: 0.000000000000000
Degree 6: 0.000000000000000 1.000000000000004 1.999999999999983 3.000000000000023 3.999999999999985 5.000000000000005 5.999999999999999
Relative Error: 0.000000000000002
Degree 7: 0.000000000000010 0.999999999999929 2.000000000000212 2.999999999999676 4.000000000000270 4.999999999999876 6.000000000000029 6.99999999999997
Relative Error: 0.000000000000035
Degree 8: 0.000000000000092 0.999999999999130 2.0000000000003106 2.999999999994441 4.0000000000005564 4.999999999996751 6.000000000001098 6.99999999999801 8.000000000000015
Relative Error: 0.000000000000642
```

e.

高斯消去的誤差最大，其次是new system，誤差最小的是original system；然後degree越小誤差越小，我推測是因為要估算的值比較少所以較精確，

f.

Result 1:

Degree 5: 0.6935156584 -3.3924582005 10.2433595657 -3.3909101486 6.1712498665 4.7321372032
Relative Error: 0.8085251451
Degree 6: -3.5480937958 28.6557788849 -67.2954101562 80.4590148926 -38.7847137451 16.4249229431 4.8230500221
Relative Error: 8.1474246979
Degree 7: 1994.0070800781 -14230.9042968750 30679.2167968750 -26146.0078125000 7226.0839843750 1825.8853759766 -1321.3498535156 194.8783416748
Relative Error: 3042.7160644531
Degree 8: -104.2004623413 722.4912719727 -1533.7889404297 1391.4665527344 -580.7797241211 136.5612335205 -31.8548431396 20.9623355865 5.9772186279
Relative Error: 159.3307495117

Result 2:

Degree 5: -0.0352551229 0.7905576825 3.0109086037 1.8684717417 4.4723253250 4.9334173203
Relative Error: 0.1123484969
Degree 6: 2.3933019638 -16.6452083588 42.6591262817 -38.6546936035 25.1730041504 -0.2349995375 6.5025548935
Relative Error: 4.5273203850
Degree 7: -414.3907775879 2860.7663574219 -5477.2919921875 3124.9958496094 1071.9091796875 -1768.4326171875 647.1150512695 -68.9491271973
Relative Error: 508.8518981934
Degree 8: 5644.6782226562 -27880.1308593750 30144.4746093750 12115.2470703125 -32757.9531250000 13226.9414062500 1484.2401123047 -1799.6884765625 281.4740905762
Relative Error: 3909.6315917969

Result 3:

Degree 5: 0.0001733513 0.9995742440 2.0003821850 2.9999558926 3.9999411106 5.0000147820
Relative Error: 0.0000421840
Degree 6: -0.0003782209 1.0037324429 1.9882661104 3.0151772499 3.9908487797 5.0025854111 5.9997224808
Relative Error: 0.0015220817
Degree 7: -0.0010085892 1.0011792183 2.0031855106 2.9739921093 4.0435056686 4.9702768326 6.0090551376 6.9989790916
Relative Error: 0.0041705160
Degree 8: -0.0126073640 1.0645006895 1.8731874228 3.1458728313 3.8583419323 5.1132102013 5.9429135323 7.0149807930 7.9984512329
Relative Error: 0.0195599683