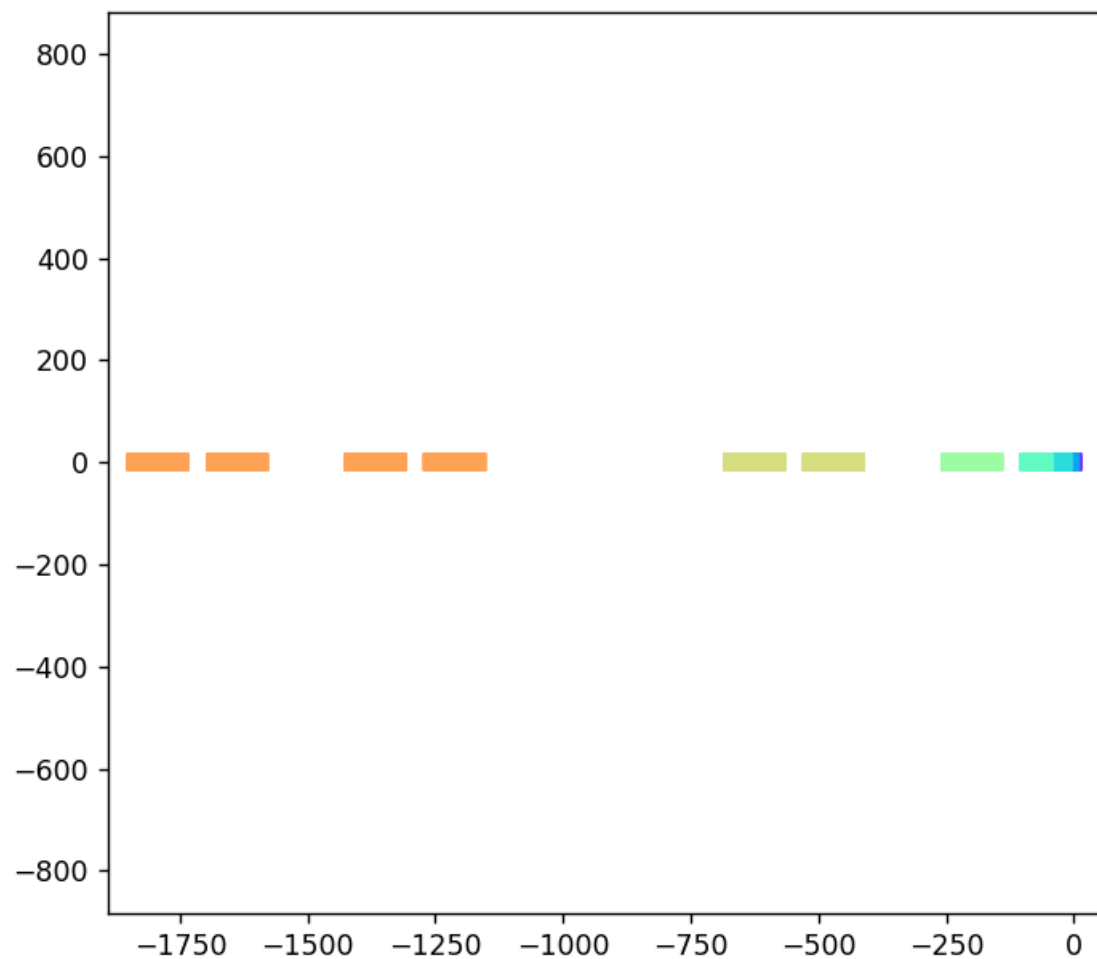




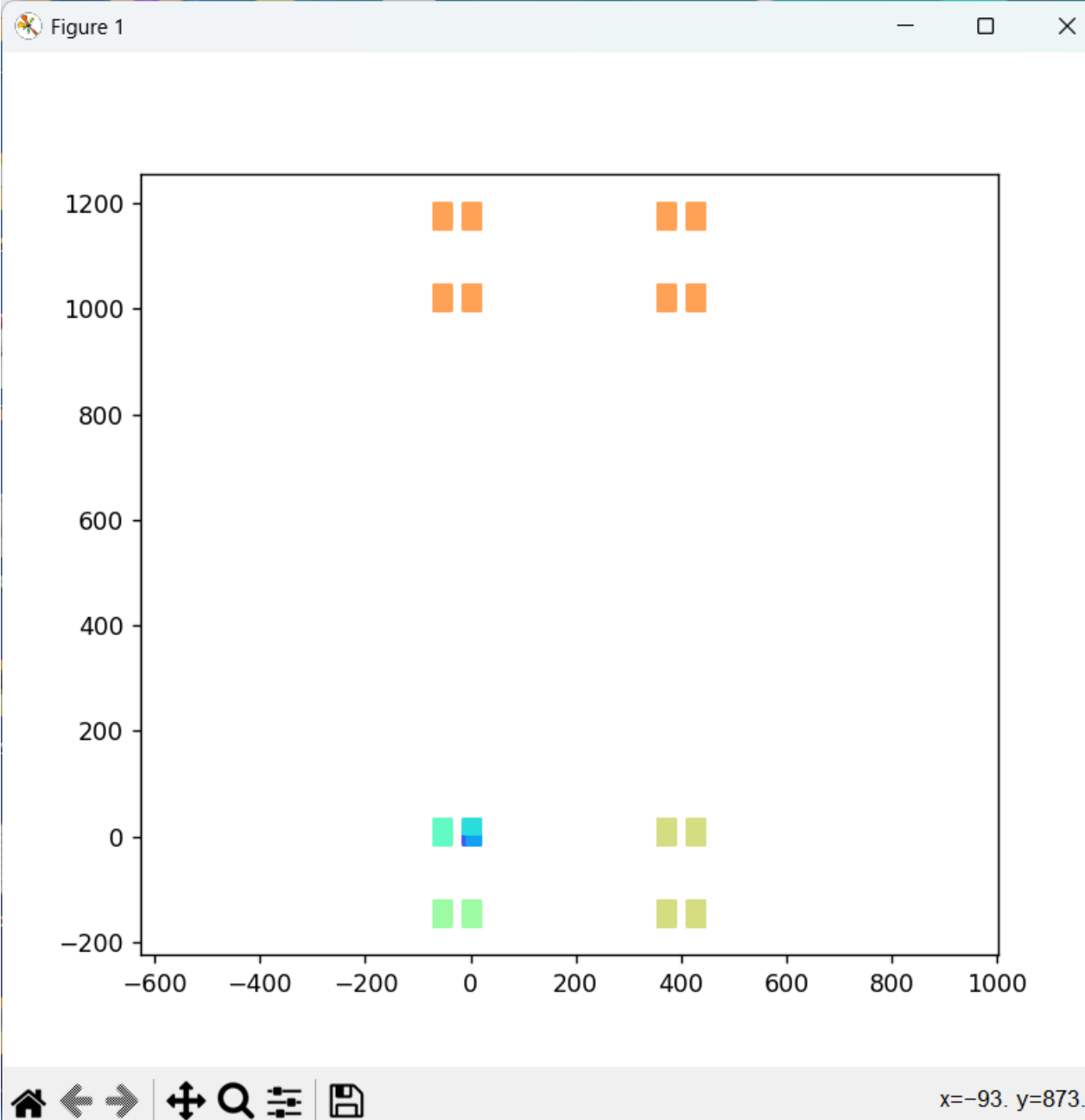
File Edit Options Buffers Tools Python Help



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1+1/2)*(1+1/3)*(1+1/5)*(1+1/7)
lesmu = [-1]
polynomes = [0]

degree = 8
for k in range(degree):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degree+1)), marker=
sr = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

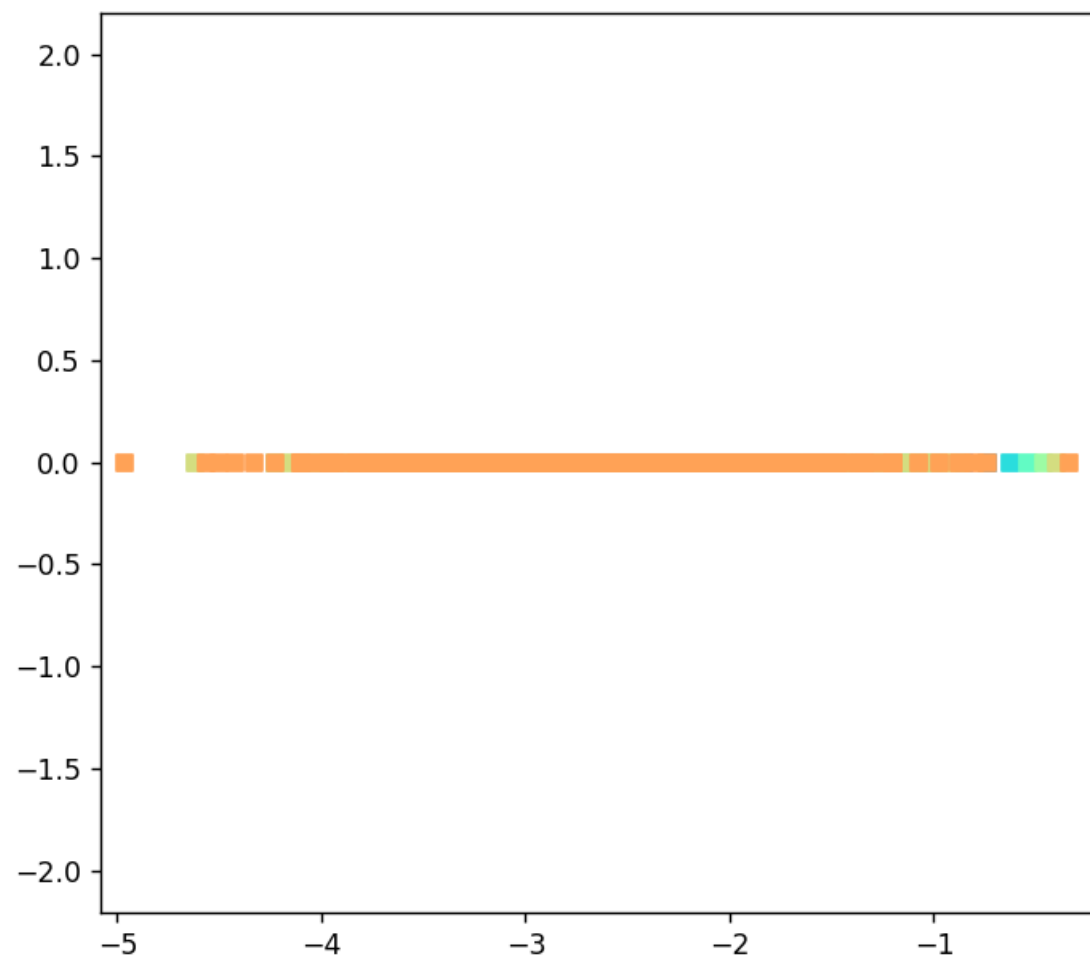
File Edit Options Buffers Tools Python Help

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1+1/2)*(1+1/3)*(1+1/5)*(1+1/7)*1j
lesmu = [-1]
polynomes = [0]

degre = 8
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

-\\--- fractales-polynomes-2023.py All L6 (Python ElDoc)
Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py



x=-1.466 y=0.256

File Edit Options Buffers Tools Python Help



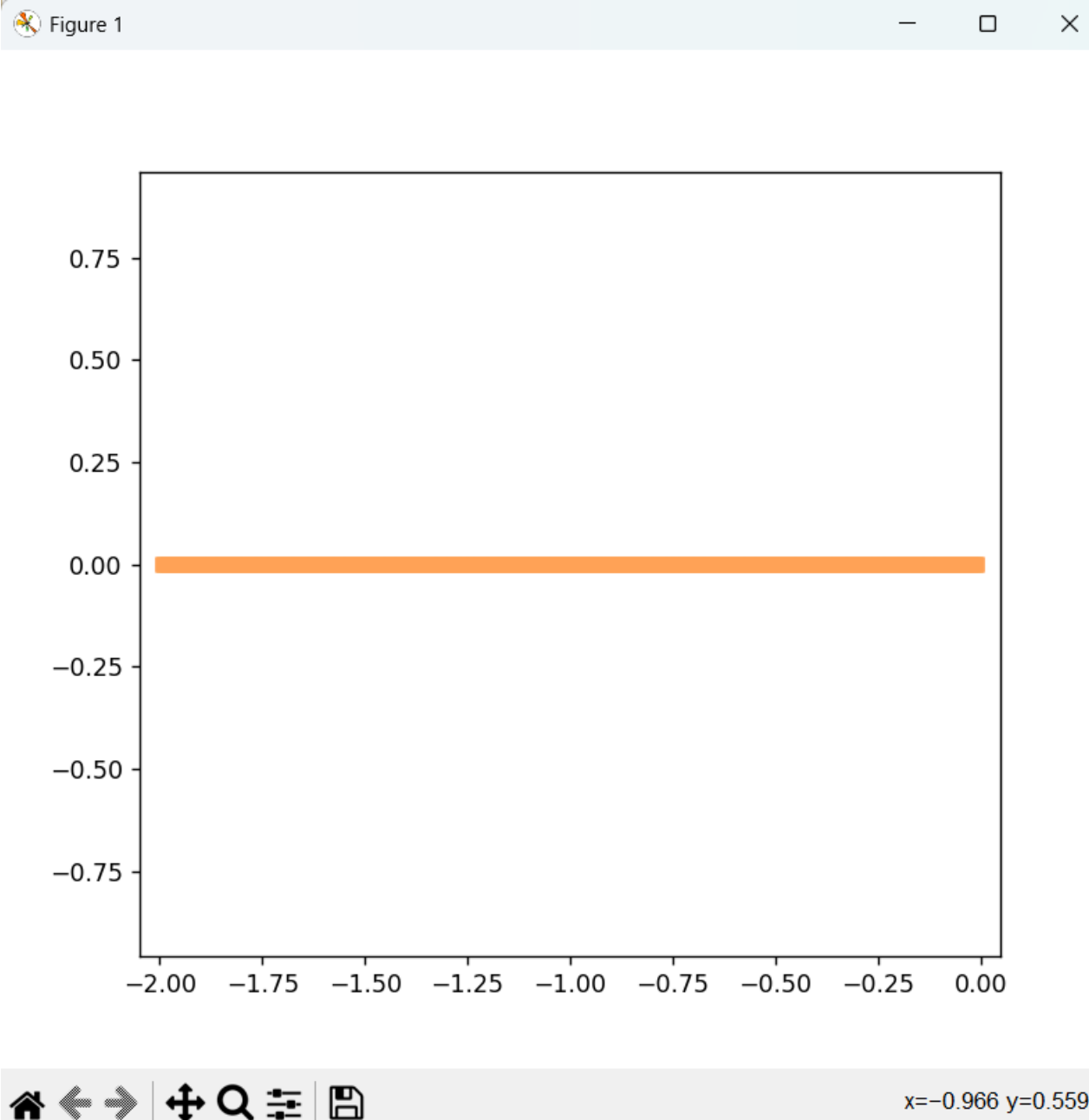
```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = [1-1/7]
lesmu = [-1]
polynomes = [0]

degre = 8
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker = 's')
    for pc in polynomesk:
        polynomes.append(pc)
plt.axis('equal')
plt.show()
```

-\\--- fractales-polynomes-2023.py All L6 (Python ElDoc)

Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

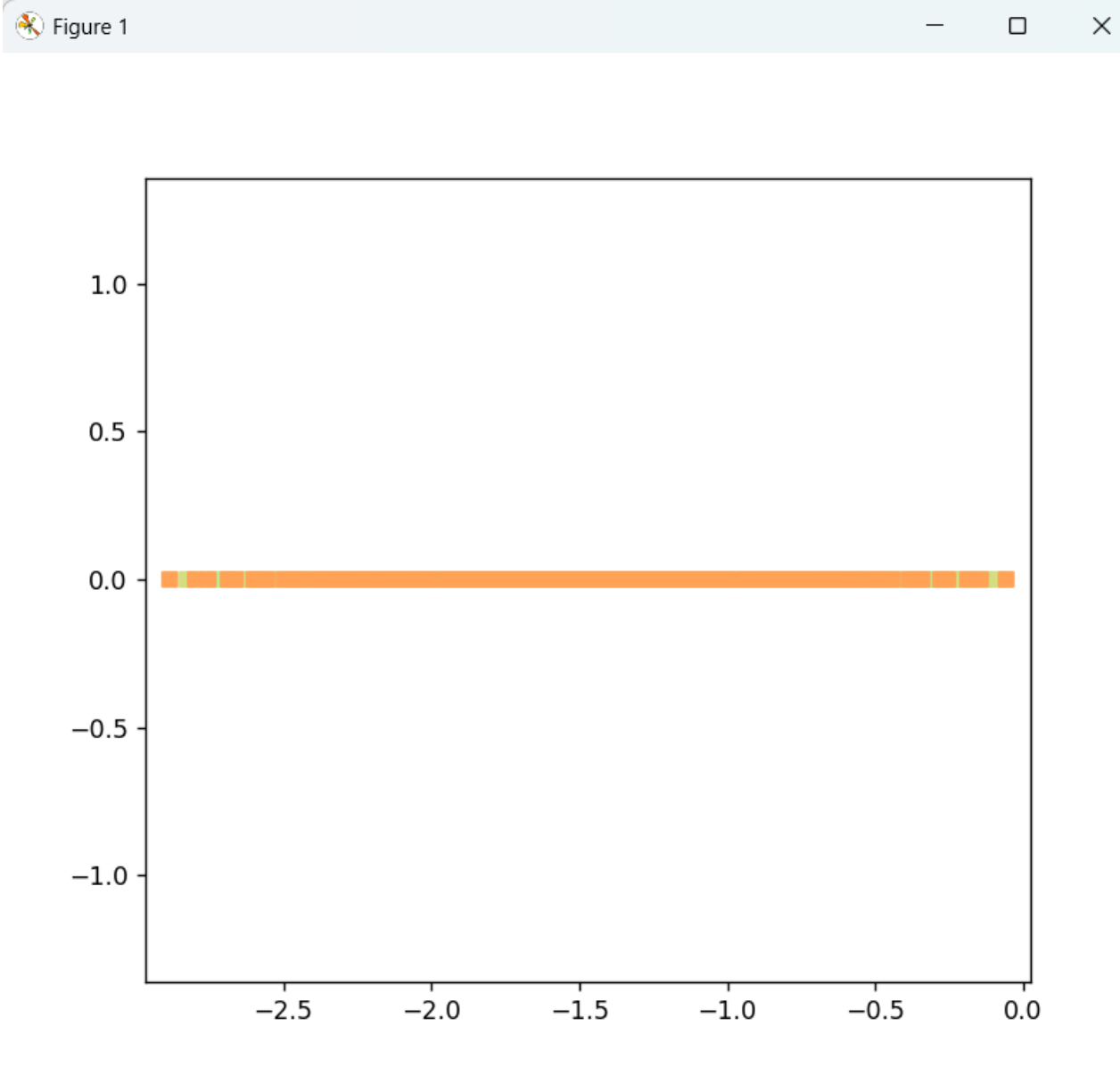
File Edit Options Buffers Tools Python Help

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)1/2
lesmu = [-1]
polynomes = [0]

degre = 8
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker=r = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

-\\--- fractales-polynomes-2023.py All L6 (Python ElDoc)
Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

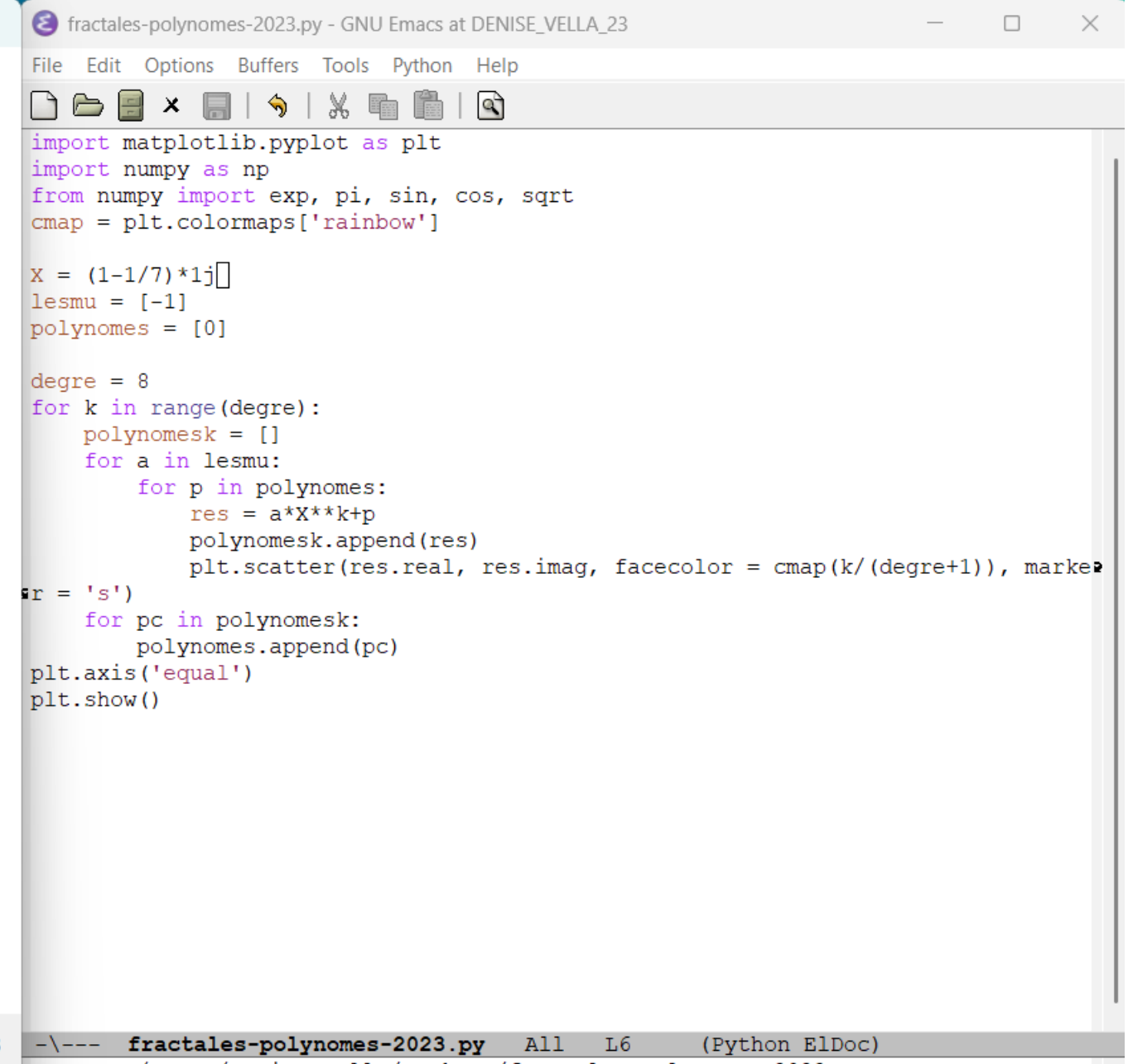
File Edit Options Buffers Tools Python Help

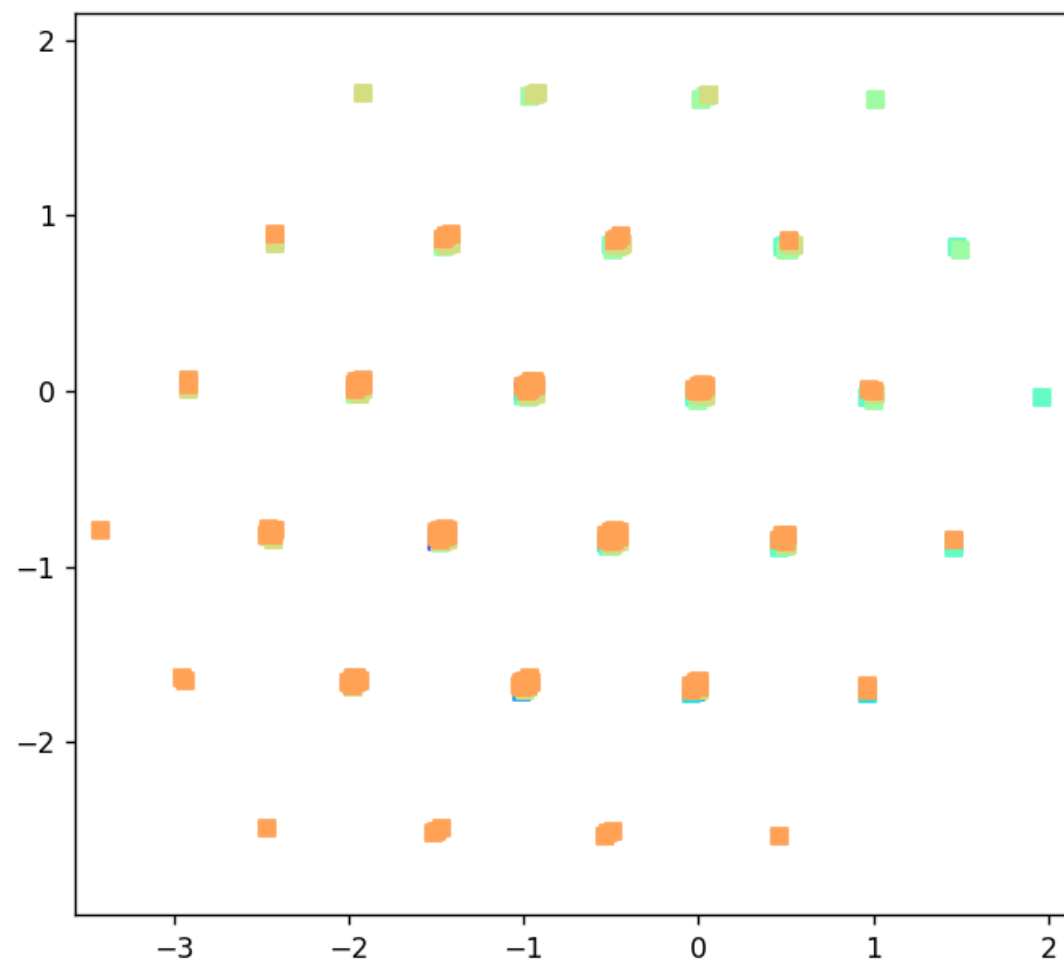
```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/3)**0.5
lesmu = [-1]
polynomes = [0]

degree = 8
for k in range(degree):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degree+1)), marker = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

-\\--- fractales-polynomes-2023.py All L6 (Python ElDoc)
Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py





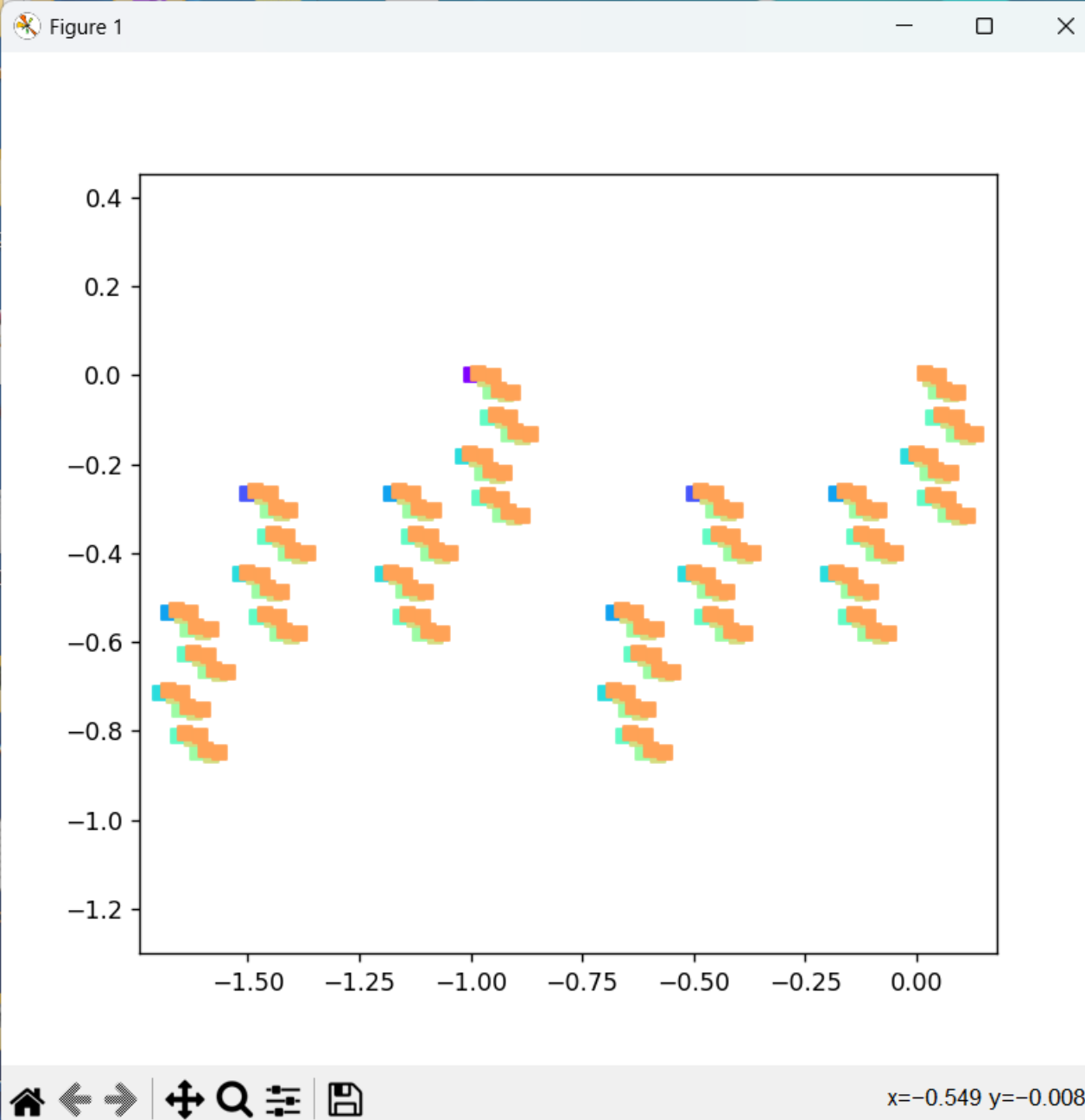
x=0.133 y=0.092



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = 0.5*(1-1/7)*1j
lesmu = [-1]
polynomes = [0]

degre = 8
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

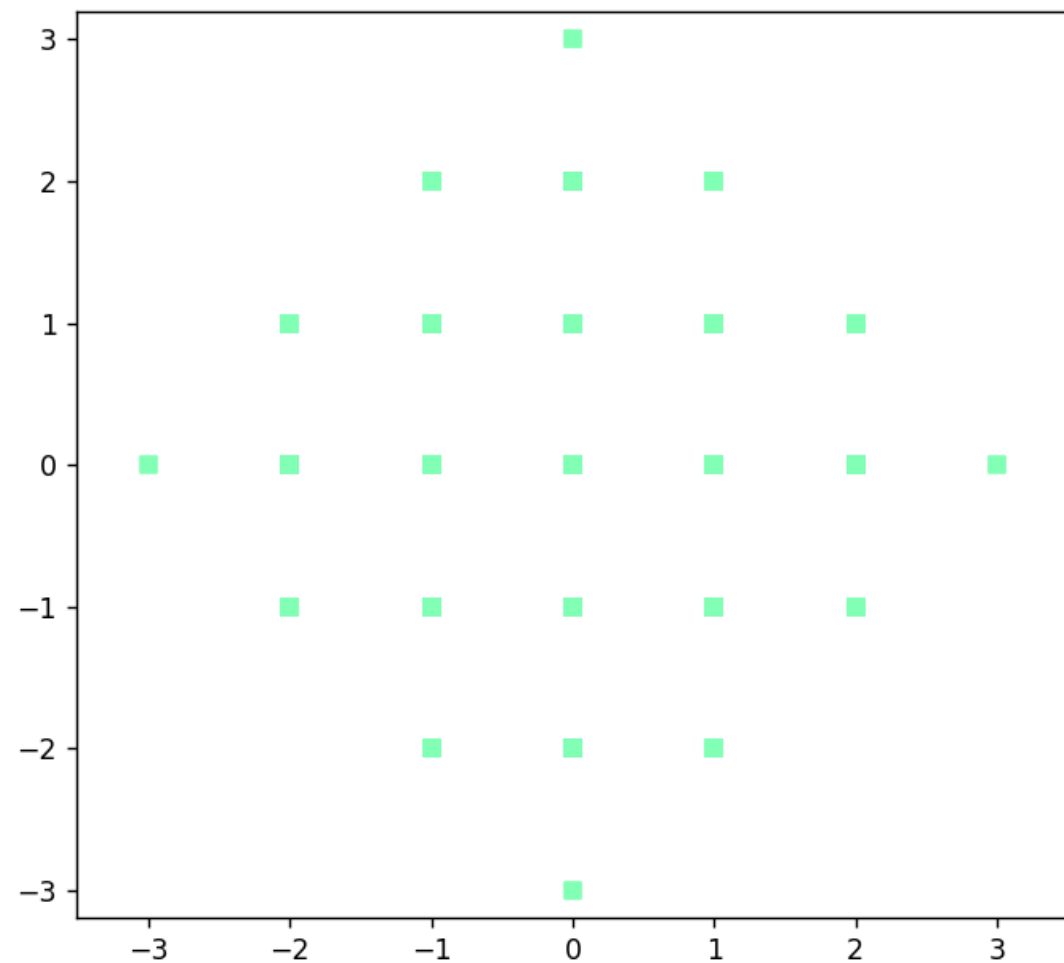
File Edit Options Buffers Tools Python Help

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = 0.5+(1-1/2)*(1-1/3)*(1-1/5)*1j
lesmu = [-1]
polynomes = [0]

degree = 8
for k in range(degree):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degree+1)), marker = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

-\\--- fractales-polynomes-2023.py All L6 (Python ElDoc)
Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py



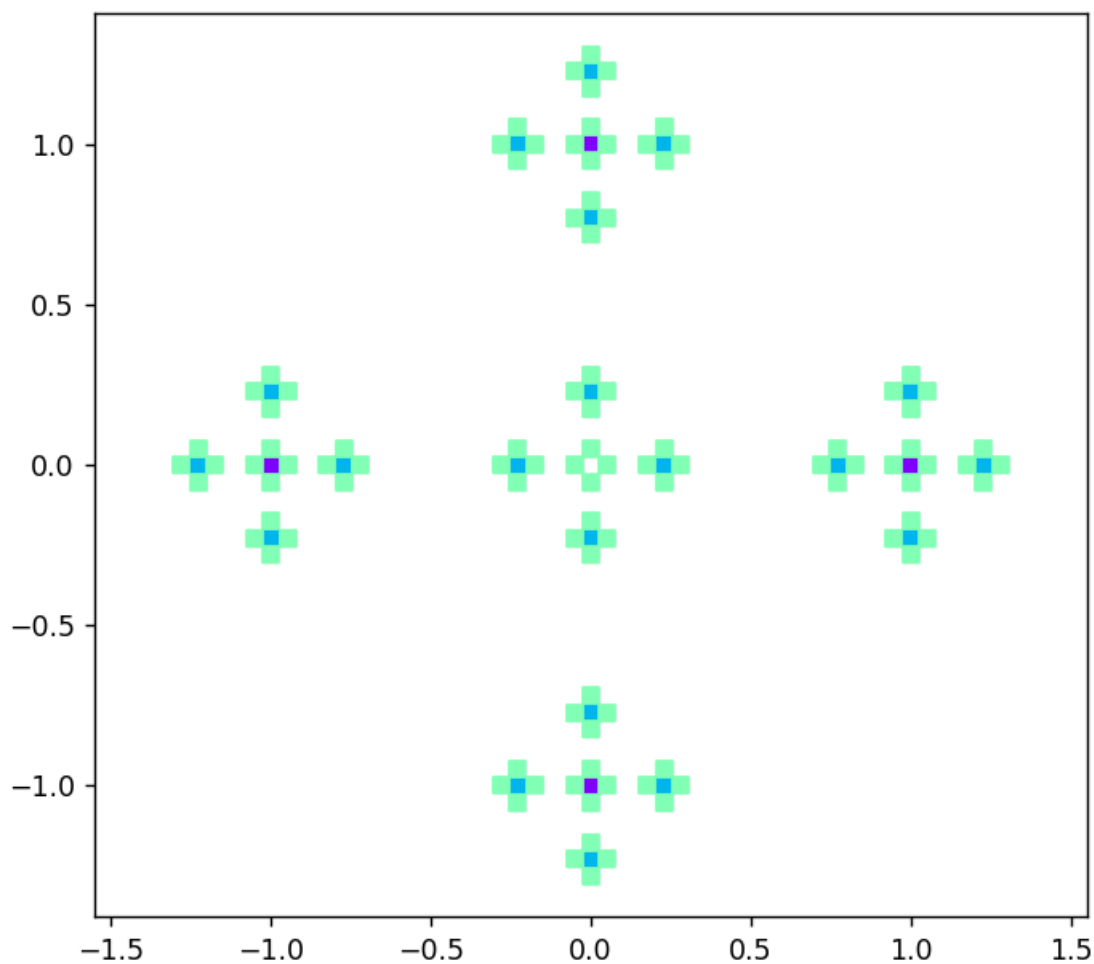
x=1.38 y=1.70



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = 1j
lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
polynomes = [0]

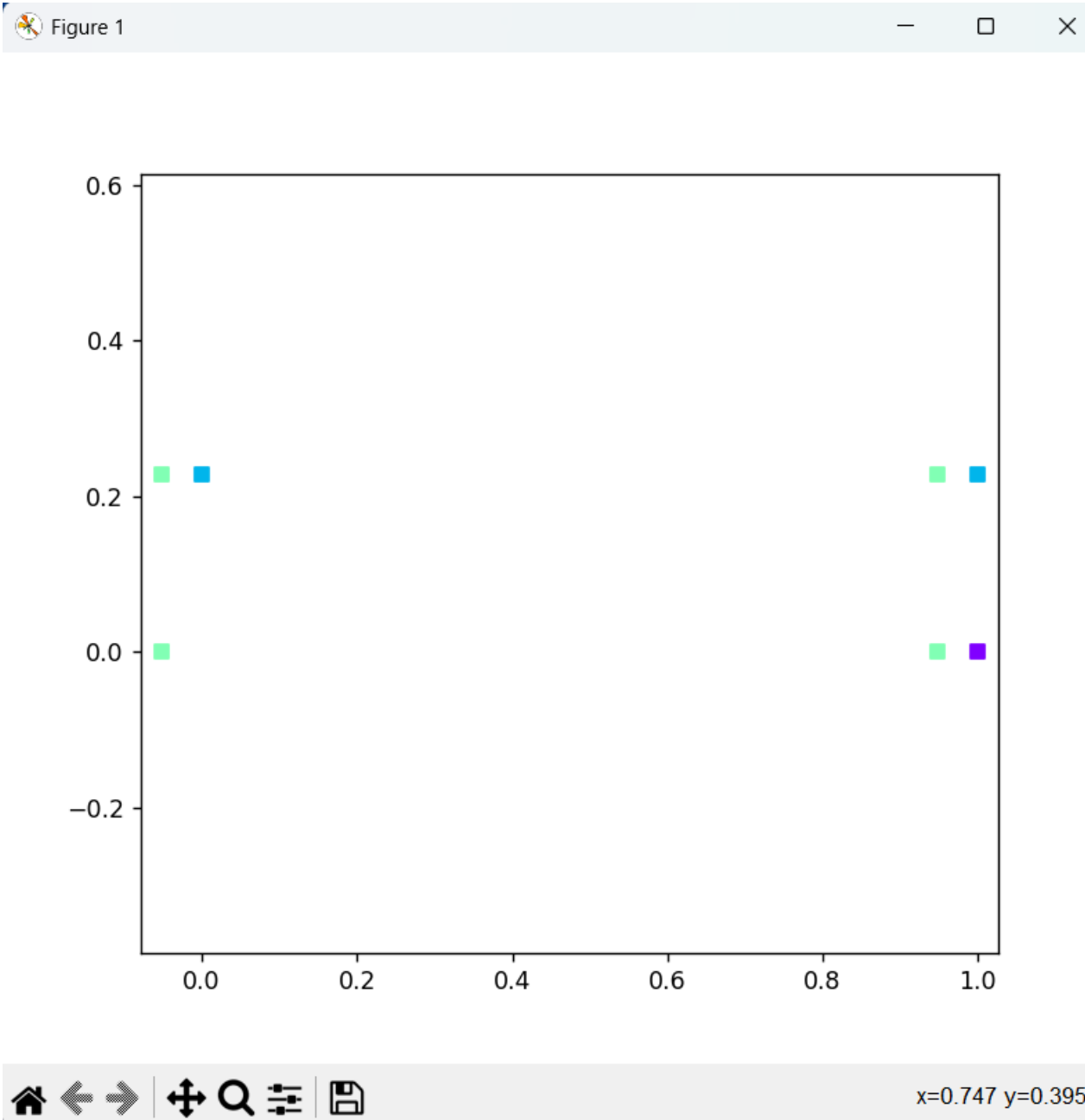
degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker='s')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)*(1-1/3)*(1-1/5)*(1-1/7)*1j
lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker='s')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

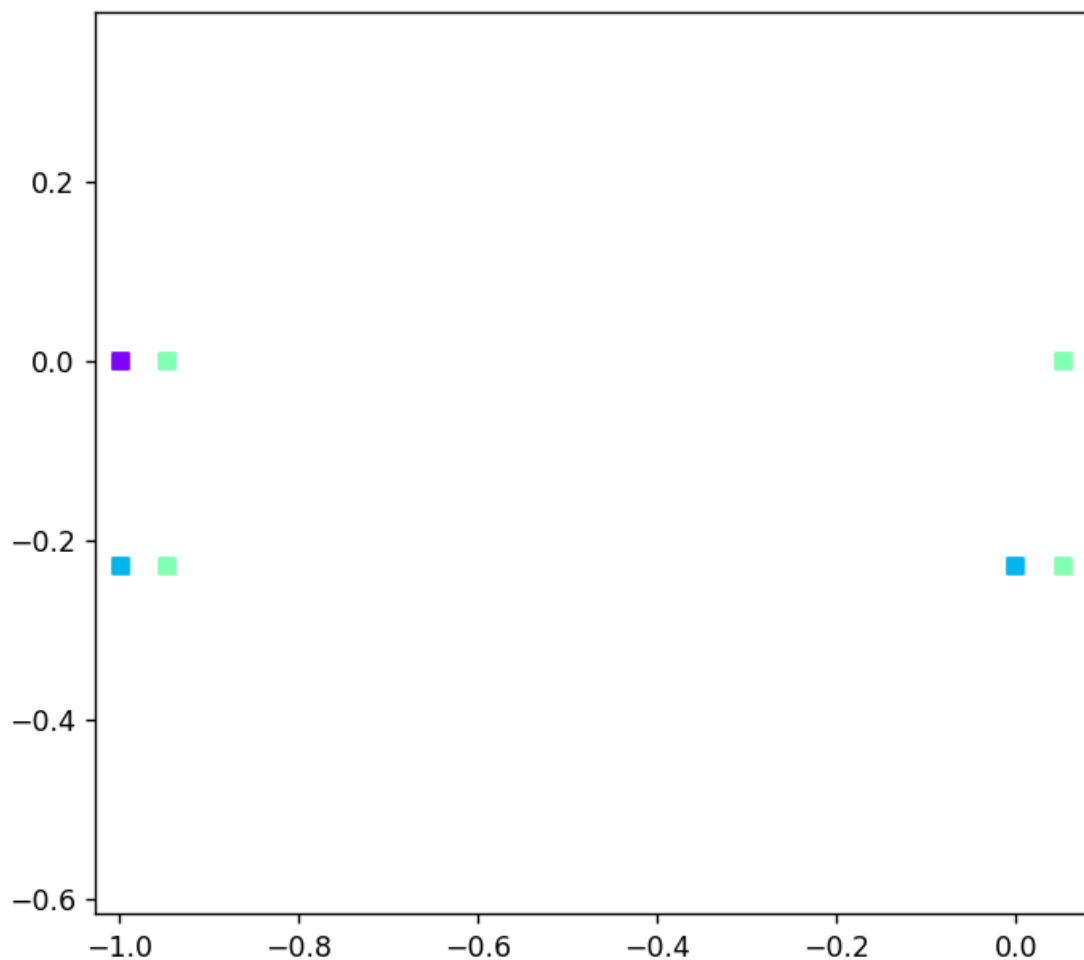
File Edit Options Buffers Tools Python Help

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)*(1-1/3)*(1-1/5)*(1-1/7)*1j
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [1]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker='s')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

Navigation icons: Home, Left, Right, Zoom In, Zoom Out, Fit, Save. Status: -\--- fractales-polynomes-2023.py All L8 (Python ElDoc) Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py



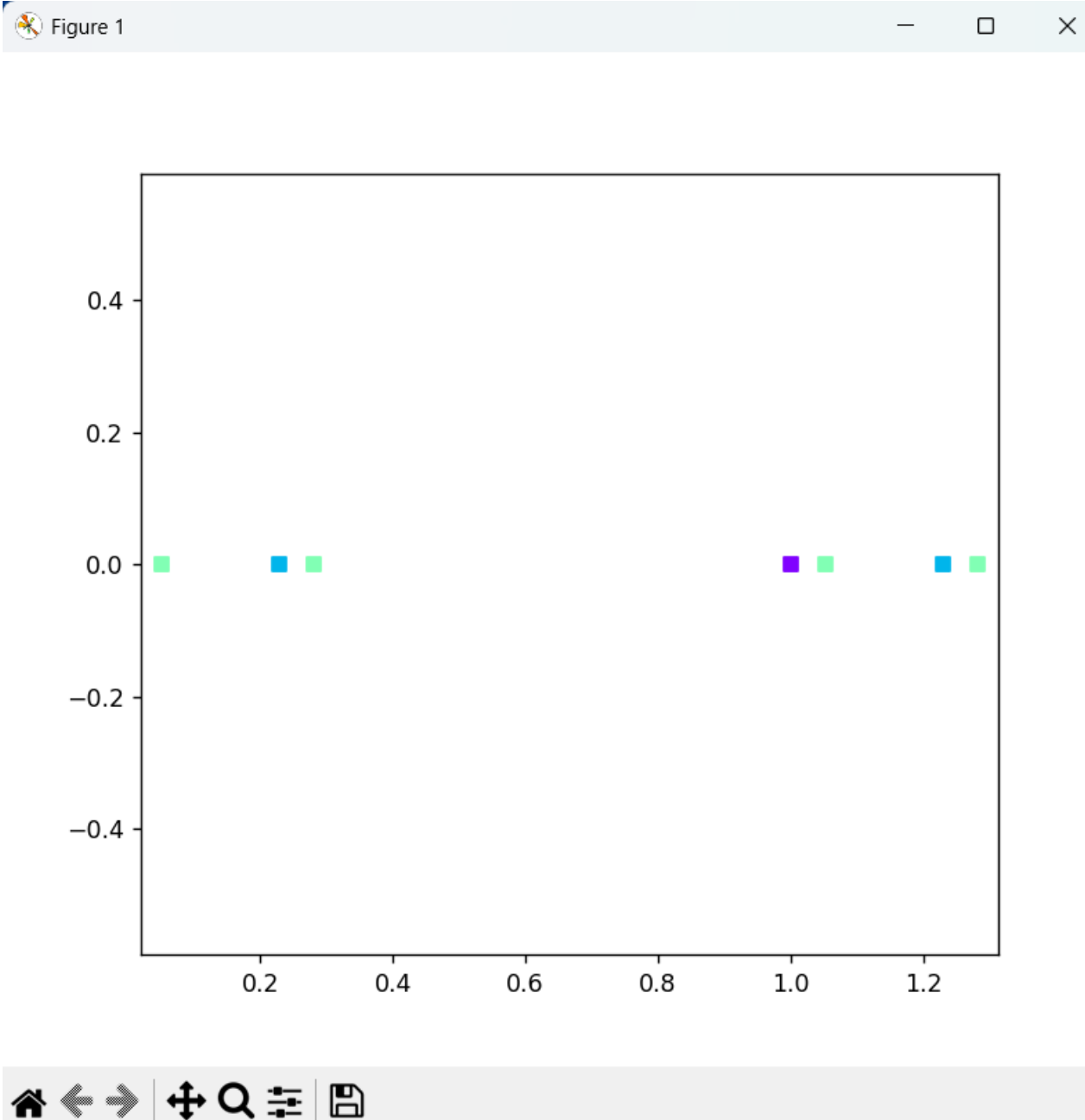
x=-0.256 y=0.171



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)*(1-1/3)*(1-1/5)*(1-1/7)*1j
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [-1]
polynomes = [0]

degree = 3
for k in range(degree):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degree+1)), marker=
sr = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

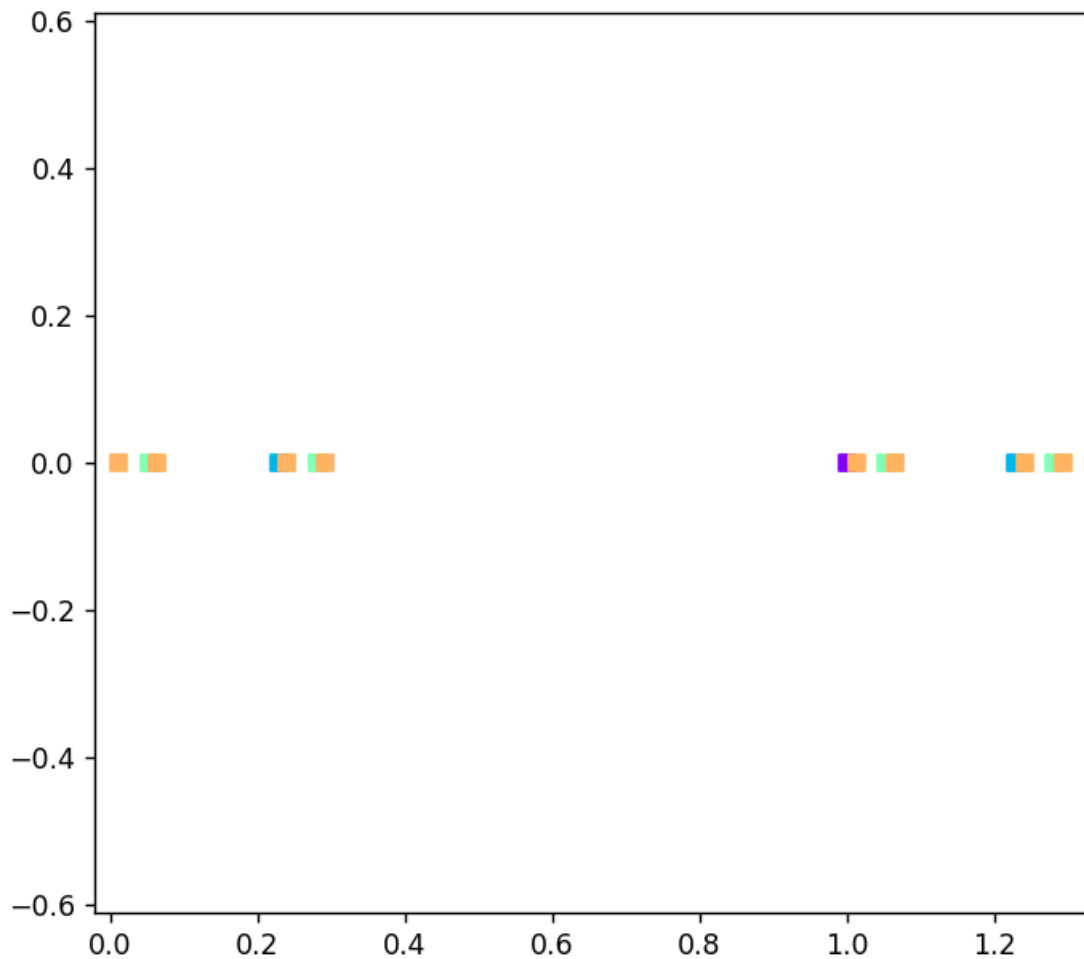
```
File Edit Options Buffers Tools Python Help

import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)*(1-1/3)*(1-1/5)*(1-1/7)
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [1]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

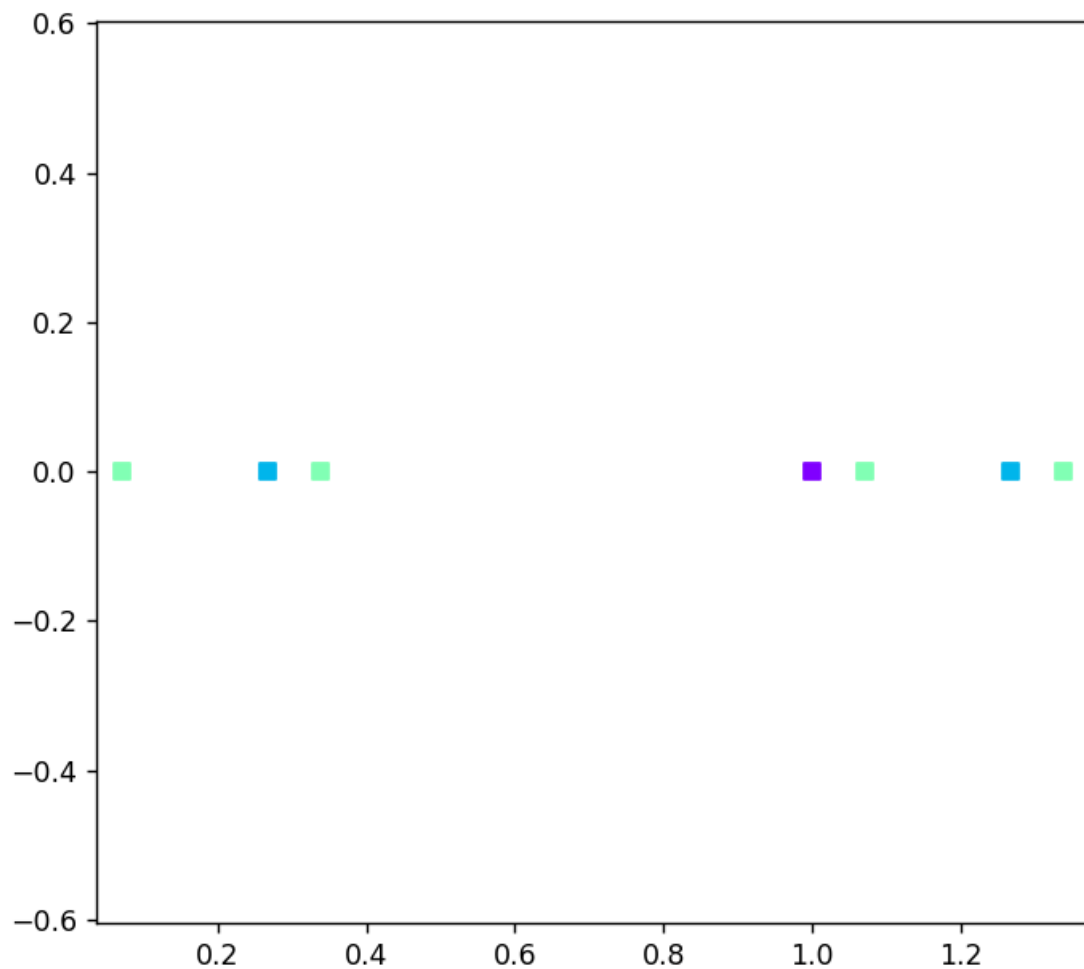
-\--- fractales-polynomes-2023.py All L12 (Python ElDoc)



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)*(1-1/3)*(1-1/5)*(1-1/7)
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [1]
polynomes = [0]

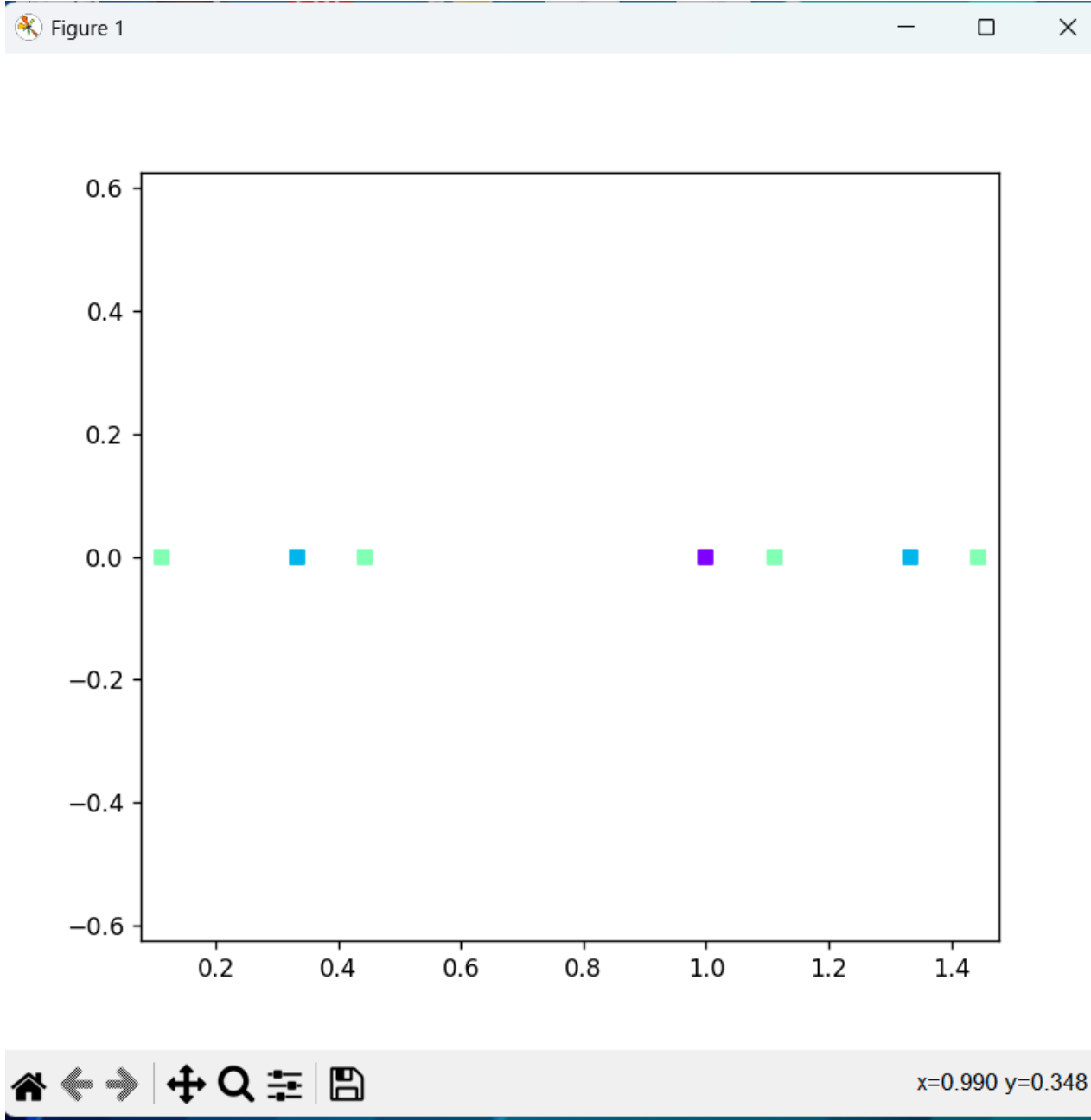
degre = 3
for k in range(degre+1):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker=
sr = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)*(1-1/3)*(1-1/5)
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [1]
polynomes = [0]

degree = 3
for k in range(degree):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degree+1)), marker=
sr = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

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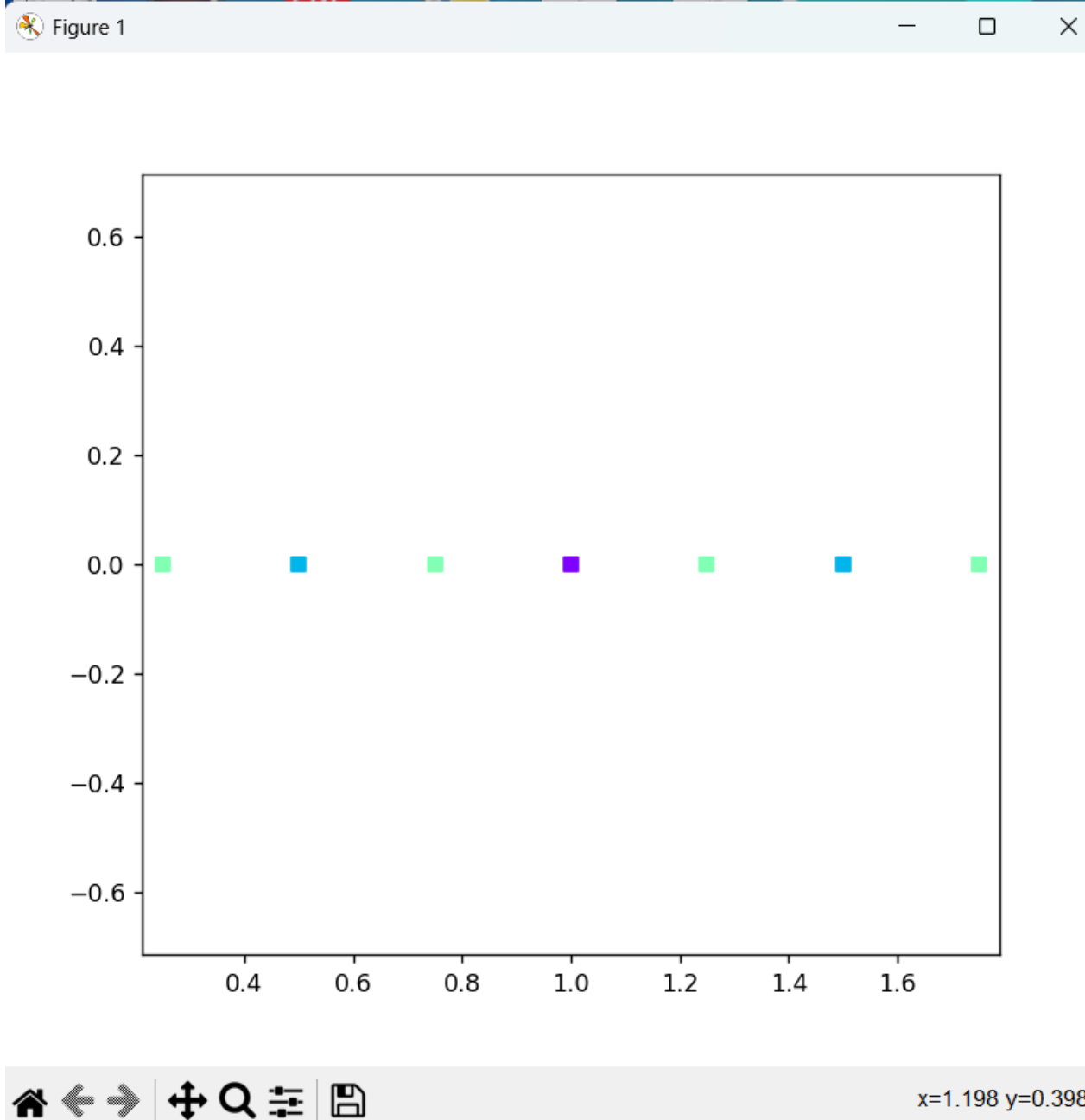
```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)*(1-1/3)
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [1]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker=
sr = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

Navigation icons: Home, Back, Forward, Pan, Zoom, Fit, Save. Status: x=0.990 y=0.348

fractales-polynomes-2023.py All L6 (Python ElDoc)
Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

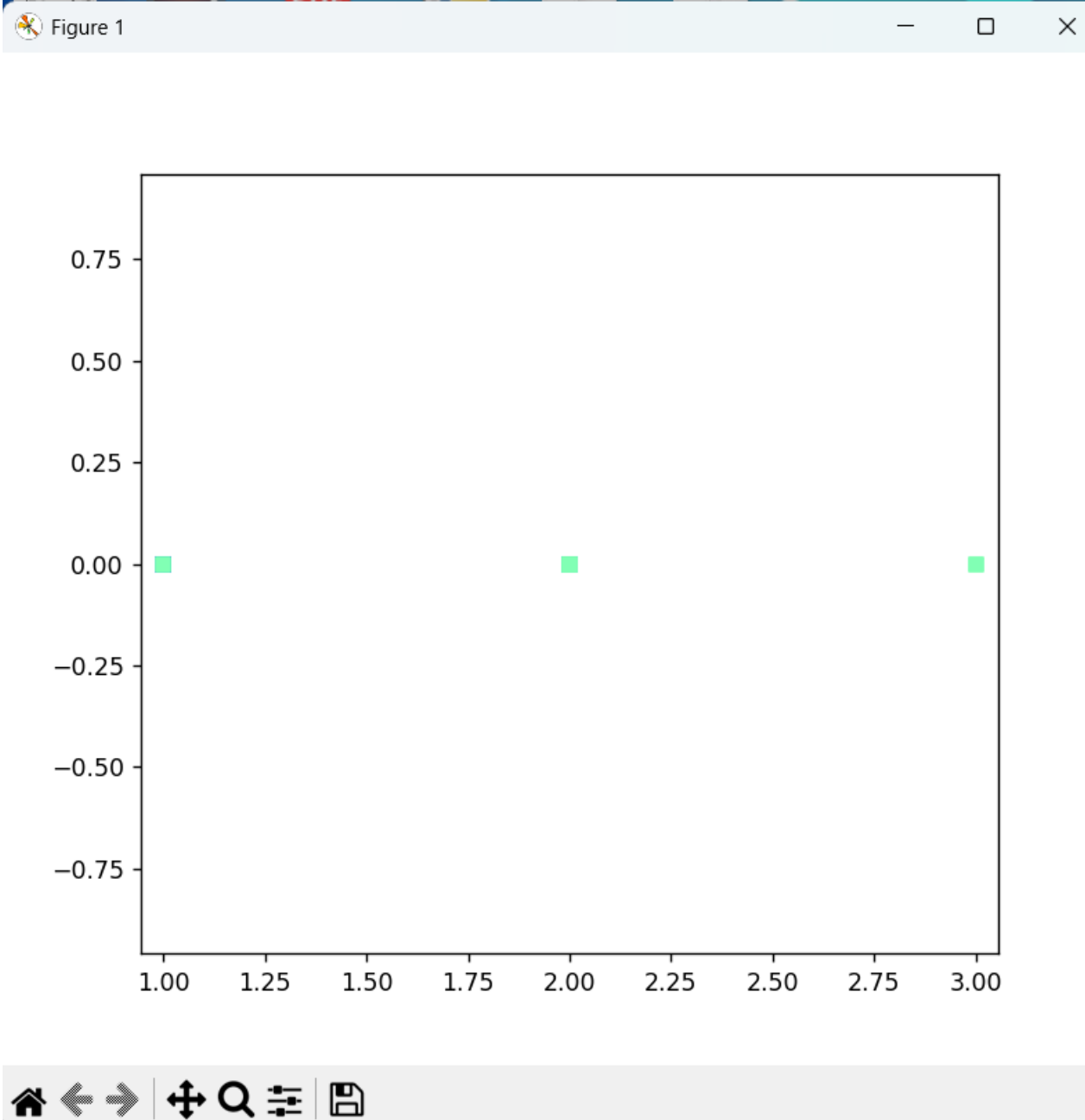
File Edit Options Buffers Tools Python Help

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (1-1/2)
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [1]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker='s')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

-- fractales-polynomes-2023.py All L20 (Python ElDoc)
(No changes need to be saved)



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

File Edit Options Buffers Tools Python Help

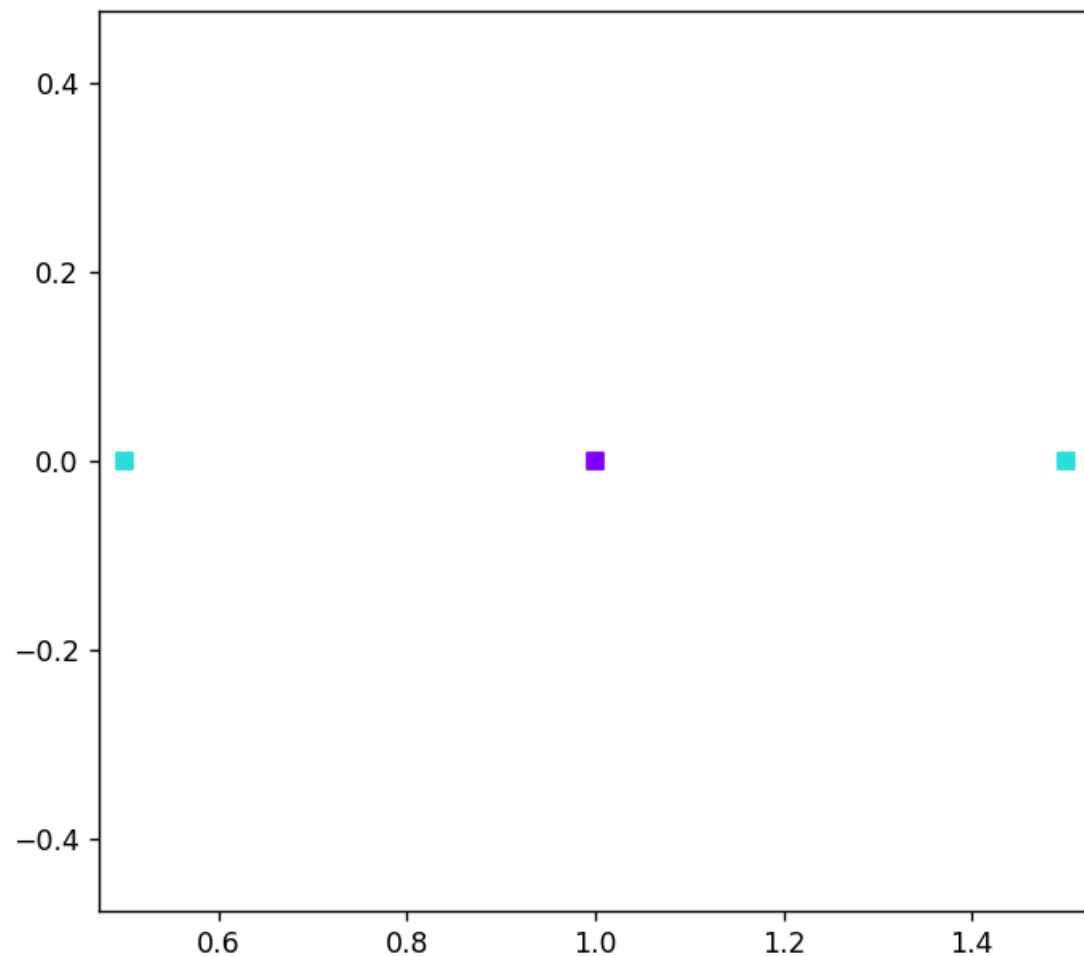
```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = 1[]
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [1]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

-\\--- fractales-polynomes-2023.py All L6 (Python ElDoc)
Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py

Figure 1



x=1.100 y=0.268

fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

File Edit Options Buffers Tools Python Help



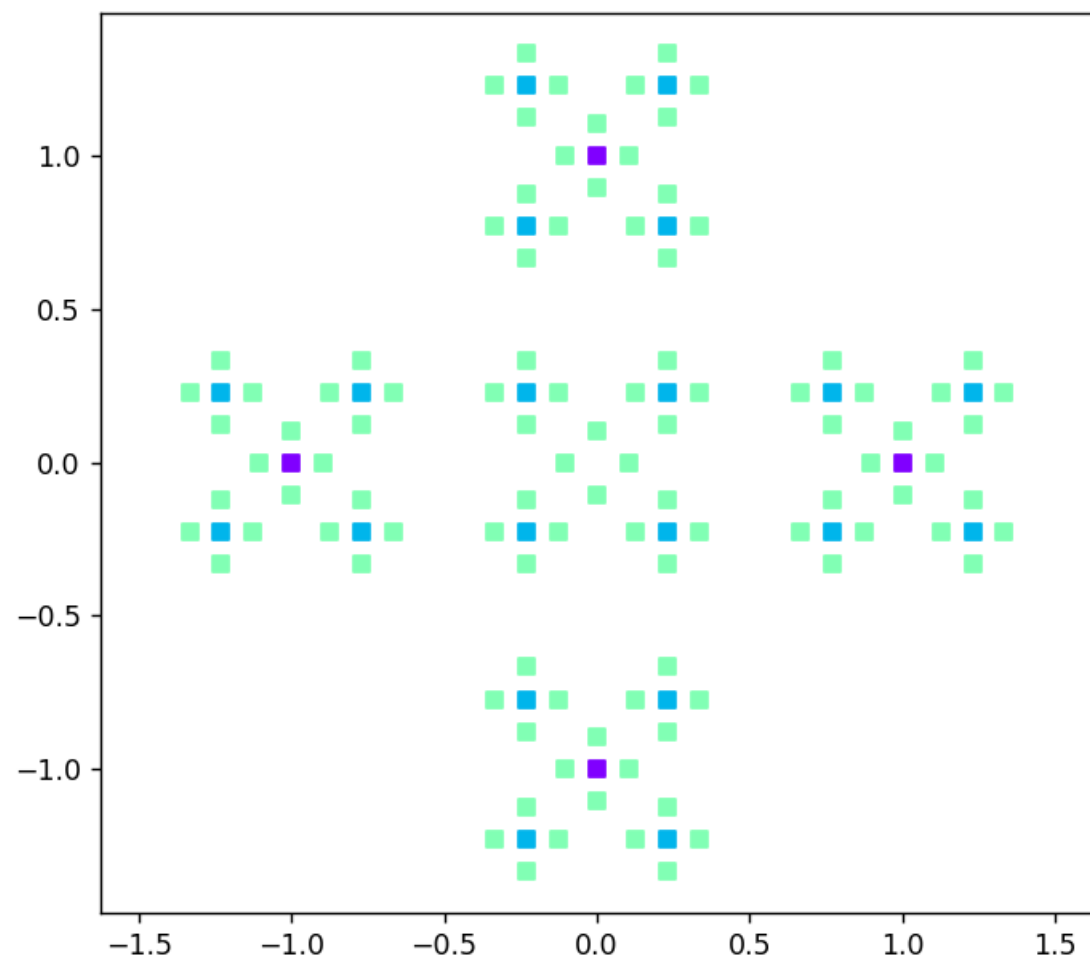
```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = 0.5
#lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
lesmu = [1]
polynomes = [0]

degre = 2
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker='s')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

-\\--- fractales-polynomes-2023.py All L11 (Python ElDoc)

Wrote c:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py



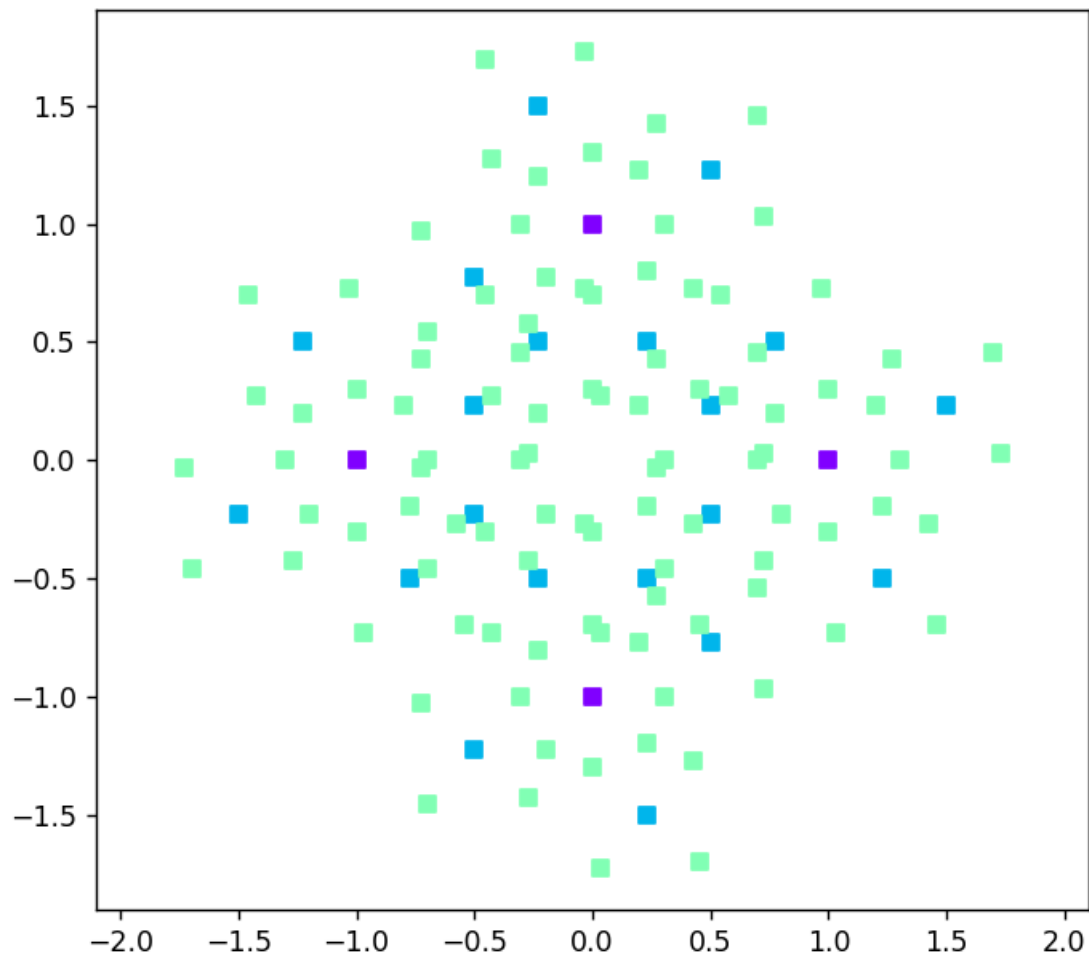
x=0.105 y=0.802



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = (0.5*(2/3)*(4/5)*(6/7))+0.5*(2/3)*(4/5)*(6/7)*1j
lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
#lesmu = [1]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker=
r = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



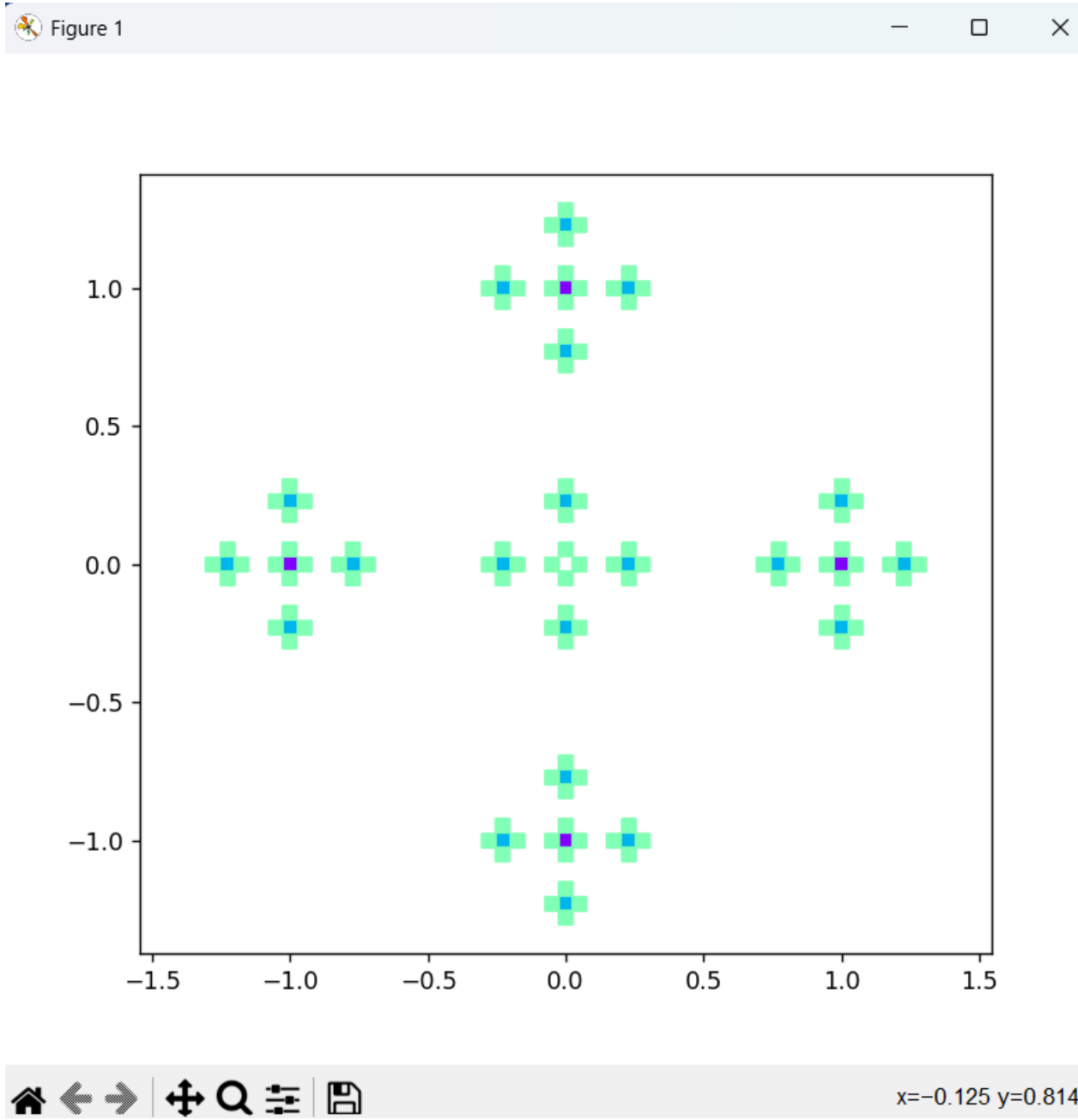
x=-0.393 y=1.078



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = 0.5 + 0.5*(2/3)*(4/5)*(6/7)*1j
lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
#lesmu = [1]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker=
r = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```



fractales-polynomes-2023.py - GNU Emacs at DENISE_VELLA_23

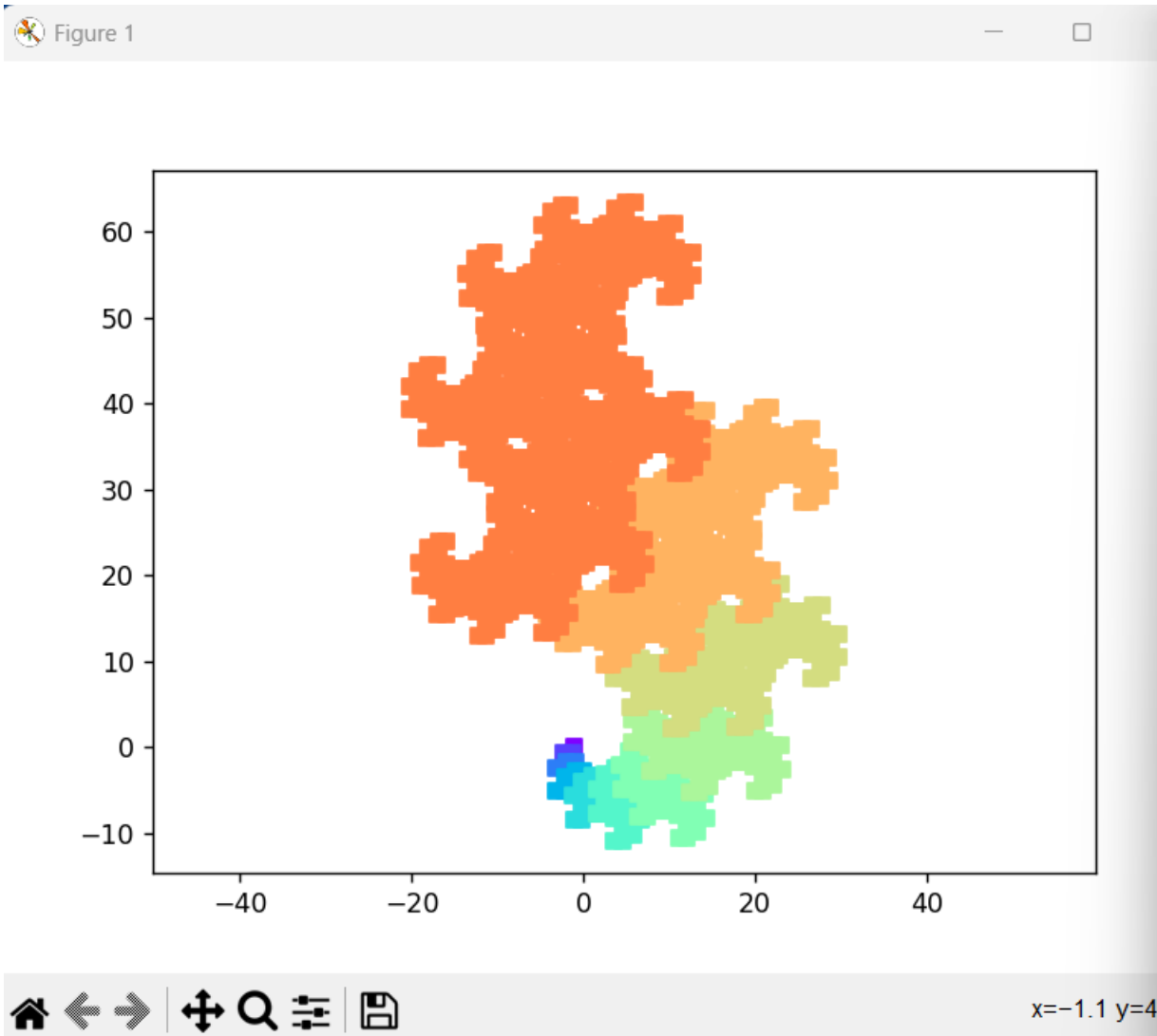
File Edit Options Buffers Tools Python Help

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = 0.5*(2/3)*(4/5)*(6/7)*1j
lesmu = [exp(2*pi*k*1j/4) for k in range(4)]
#lesmu = [1]
polynomes = [0]

degre = 3
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            #res = a*X**k+p
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

fractales-polynomes-2023.py All L7 (Python ElDoc)
Wrote g:/Users/Denise Vella/Desktop/fractales-polynomes-2023.py



avec-petits-trous-mais-jolie.py - GNU Emacs at DENISE_VELLA_23

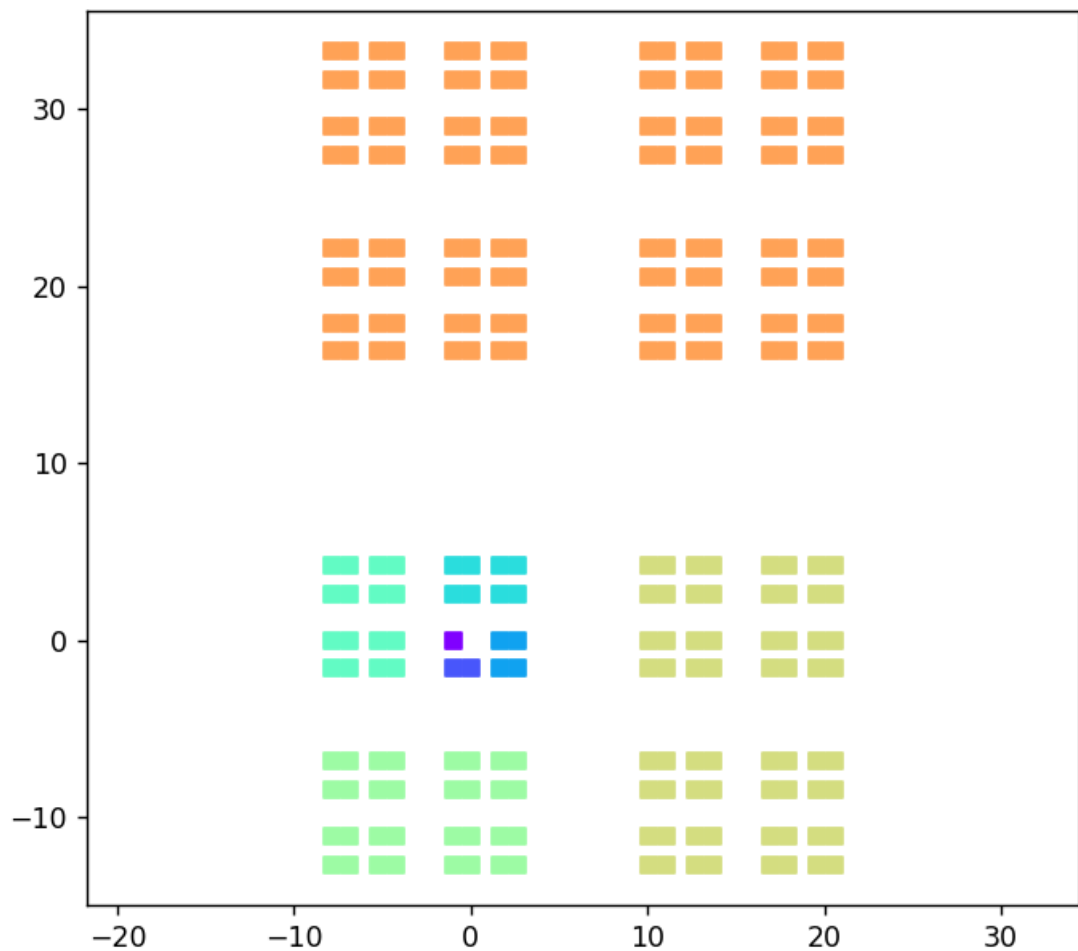
File Edit Options Buffers Tools Python Help

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = 0.5*(1+sqrt(2))+0.5*sqrt(2)*1j
lesmu = [-1]
polynomes = [0]

degree = 11
for k in range(degree):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degree+1)), marker = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```

avec-petits-trous-mais-jolie.py All L1 (Python ElDoc)



```
import matplotlib.pyplot as plt
import numpy as np
from numpy import exp, pi, sin, cos, sqrt
cmap = plt.colormaps['rainbow']

X = ((1+sqrt(5))/2)*1j
lesmu = [-1]
polynomes = [0]

degre = 8
for k in range(degre):
    polynomesk = []
    for a in lesmu:
        for p in polynomes:
            res = a*X**k+p
            polynomesk.append(res)
            plt.scatter(res.real, res.imag, facecolor = cmap(k/(degre+1)), marker=
kr = 's')
        for pc in polynomesk:
            polynomes.append(pc)
plt.axis('equal')
plt.show()
```