# HW8D

October 31, 2019

[1]:
```
def midpoint(p1,p2):
    m = [0,0]
    m[0] = (p1[0]+p2[0])/2
    m[1] = (p1[1]+p2[1])/2
    return m
```

[ ]:
```
```

[2]:
```
p = [0,0,0]
p[0] = [0,0]
p[1] = [10,0]
p[2] = [5,5*sqrt(3)]

q = []
q.append(p)
```

[3]:
```
plt = []
i = 0
def triin(p1,p2,p3):
    m = [0,0,0]
    m[0] = midpoint(p1,p2)
    m[1] = midpoint(p2,p3)
    m[2] = midpoint(p3,p1)
    plt.append(polygon2d([m[0], m[1], m[2]], fill=False))
    return m
```

[4]:
```
plt.append(polygon2d([p[0], p[1], p[2]], fill=False))
plt
```

[4]:
```
[Graphics object consisting of 1 graphics primitive]
```

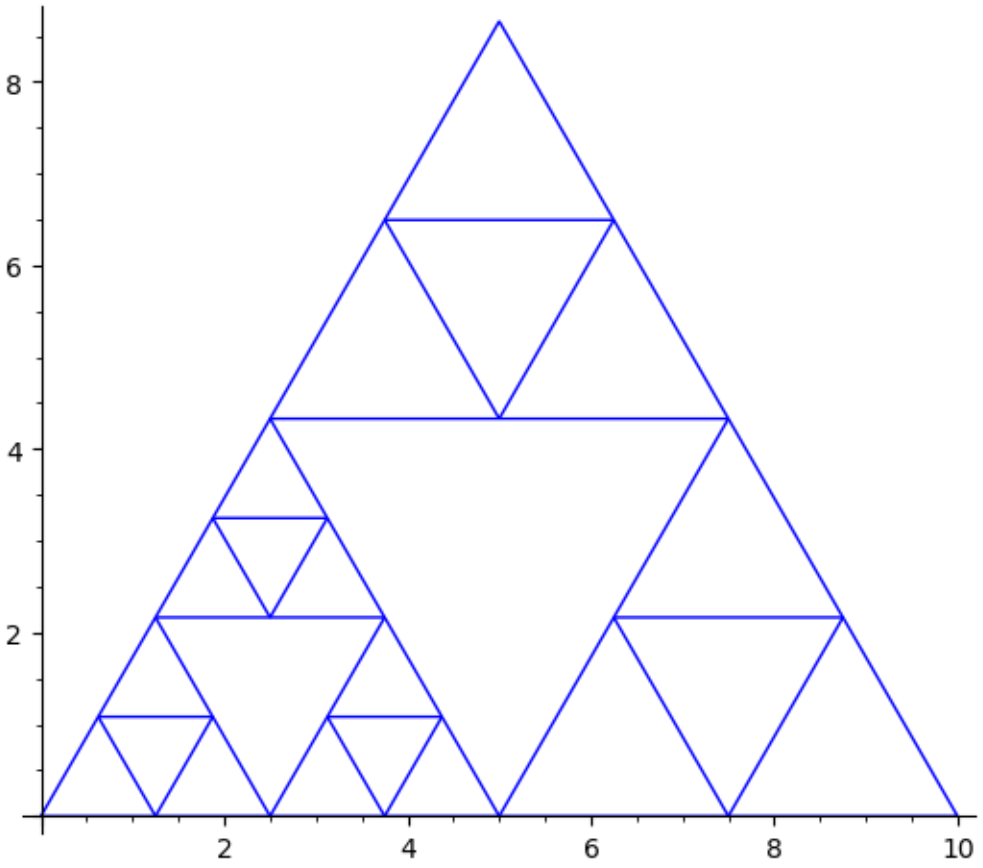
[5]:
```
q.append(triin(q[0][0],q[0][1],q[0][2]))
for i in range(1,3):
    #for j in range(0,2):
    q.append(triin(q[0][0],q[i][0],q[i][2]))
    q.append(triin(q[i][0],q[i-1][2-i],q[i][1]))
    q.append(triin(q[i][2],q[i][1],q[i-1][2]))
```

```
#q.append(triin(q[0][0],q[1][0],q[1][2]))
#q.append(triin(q[1][0],q[0][1],q[1][1]))
#q.append(triin(q[1][2],q[1][1],q[0][2]))

#q.append(triin(q[0][0],q[2][0],q[2][2]))
#q.append(triin(q[3][0],q[0][1],q[3][1]))
#q.append(triin(q[4][2],q[4][1],q[0][2]))
#plt
```

[6]:
```
plot = plt[0]
for i in range(1,len(plt)):
    plot += plt[i].plot()
plot
```

[6]:




[7]:
```
list(q)
```

[7]:
```
[[[0, 0], [10, 0], [5, 5*sqrt(3)]],
 [[5, 0], [15/2, 5/2*sqrt(3)], [5/2, 5/2*sqrt(3)]],
```

```
[[5/2, 0], [15/4, 5/4*sqrt(3)], [5/4, 5/4*sqrt(3)]],
[[15/2, 0], [35/4, 5/4*sqrt(3)], [25/4, 5/4*sqrt(3)]],
[[5, 5/2*sqrt(3)], [25/4, 15/4*sqrt(3)], [15/4, 15/4*sqrt(3)]],
[[5/4, 0], [15/8, 5/8*sqrt(3)], [5/8, 5/8*sqrt(3)]],
[[15/4, 0], [35/8, 5/8*sqrt(3)], [25/8, 5/8*sqrt(3)]],
[[5/2, 5/4*sqrt(3)], [25/8, 15/8*sqrt(3)], [15/8, 15/8*sqrt(3)]]]
```

[ ]: