

```
1 import numpy as np
2 from matplotlib import pyplot as plt
3
4 def gen_sample(f, n):
5     """generate a discrete sample of f of length 2^n """
6     x = np.linspace(0,1,2**n+1)
7     return x, f(x)
8
9 if __name__ == "__main__":
10     f = lambda x: np.sin(2*np.pi*x - 5)/np.sqrt(np.abs(x - np.pi/20))
11     for n in xrange(1,11):
12         x,y = gen_sample(f,n)
13         plt.step(x,y,where="post")
14     x = np.linspace(0,1,1000)
15     plt.plot(x,f(x))
16     plt.show()
17
```

