```
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
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IPython 7.31.1 -- An enhanced Interactive Python.

In [1]: import numpy as np
   ...: import pandas as pd
   ...: from scipy.stats import norm
   ...: import matplotlib.pyplot as plt
   ...: import astroML

In [2]: N=[1,5,10]
   ...: np.random.seed(50)
   ...: x = np.random.chisquare(3,(max(N), int(1E6)))

In [3]: fig = plt.figure(figsize=(5, 5))
   ...: fig.subplots_adjust(hspace=0.05)
   ...:
   ...: for i in range(len(N)):
   ...:     ax = fig.add_subplot(3, 1, i + 1)
   ...:
   ...:
   ...:     x_i = x[:N[i], :].mean(0)
   ...:
   ...:
   ...:     ax.hist(x_i, bins=np.linspace(0, 5,95),
   ...:             histtype='stepfilled', alpha=0.5, density=True,color='red')
   ...:
   ...:
   ...:     mu = 3
   ...:     sigma = np.sqrt(2*3) / np.sqrt(N[i])
   ...:     dist = norm(mu, sigma)
   ...:     x_pdf = np.linspace(-0.5, 5, 1000)
   ...:     ax.plot(x_pdf, dist.pdf(x_pdf), '-k')
   ...:
   ...:     ax.set_xlim(0.0, 5)
   ...:     ax.set_ylim(0.001, None)
   ...:
   ...:     ax.xaxis.set_major_locator(plt.MultipleLocator(0.2))
   ...:     ax.yaxis.set_major_locator(plt.MaxNLocator(5))
   ...:
   ...:     ax.text(0.99, 0.95, r"$N = %i$" % N[i],
   ...:             ha='right', va='top', transform=ax.transAxes)
   ...:
   ...:     if i == len(N) - 1:
   ...:         ax.xaxis.set_major_formatter(plt.FormatStrFormatter('%.4f'))
   ...:         ax.set_xlabel('$x$')
   ...:     else:
   ...:         ax.xaxis.set_major_formatter(plt.NullFormatter())
   ...:
   ...:     ax.set_ylabel('$p(x)$')
   ...:
   ...: plt.show()
```

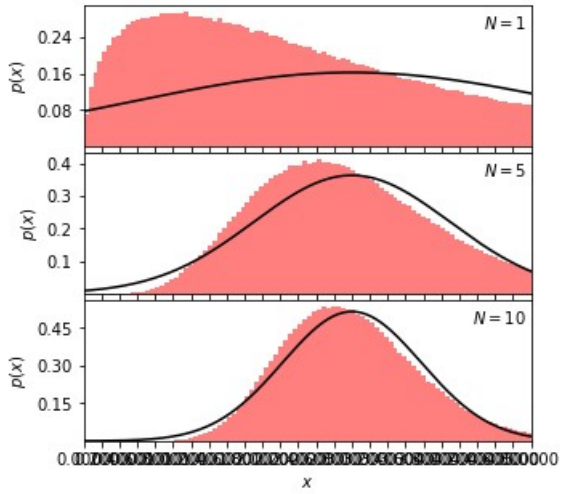

In [4]: