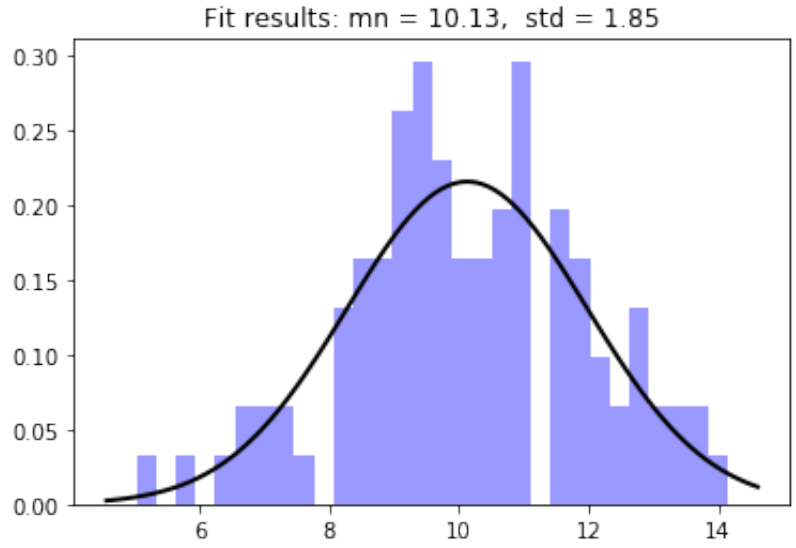
In [39]:
```
import numpy as np
import matplotlib.pyplot as plt
from scipy.stats import norm
from scipy.stats import skew
from scipy.stats import expon
import scipy.stats as stats

#NORMAL FIT
dataset = norm.rvs(10.0, 2 , size=100)
mn, std = norm.fit(dataset)
plt.hist(dataset, bins=30, normed=True, alpha=0.4, color='b')
min, max = plt.xlim()
x = np.linspace(min, max, 100)
p = norm.pdf(x, mn, std)
plt.plot(x, p, 'k', linewidth=2)
title = "Fit results: mn = %.2f,  std = %.2f" % (mn, std)
plt.title(title)
plt.show()

a = stats.norm.rvs(size = 100)
accuracy= stats.normaltest(a)
print(accuracy)
```




```
NormaltestResult(statistic=5.4647759118917767, pvalue=0.0650637346
80725294)
```

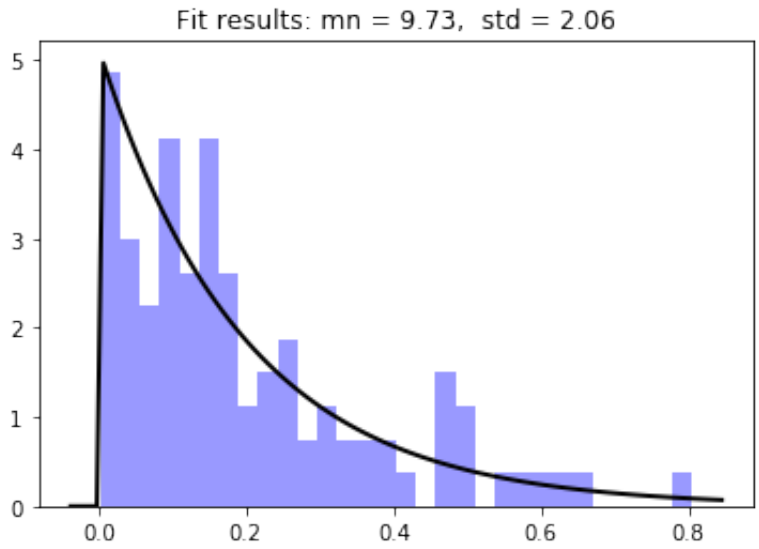
In [5]:
```
skew(dataset)

# The skewness for the normal distribution fit is Right Skewed.
```

Out[5]: 0.39617931282397806

In [30]:
```
# EXPONENTIAL FIT

exp= np.random.exponential(scale=0.2, size= 100)
loc, scale = expon.fit(exp)
plt.hist(exp, bins=30, normed=True, alpha=0.4, color='b')
min, max = plt.xlim()
x = np.linspace(min,max,100)
p= expon.pdf(x, loc, scale)
plt.plot(x,p,'k',linewidth= 2)
plt.title(title)
plt.show()
```



Out[30]: 1.2429523114568255

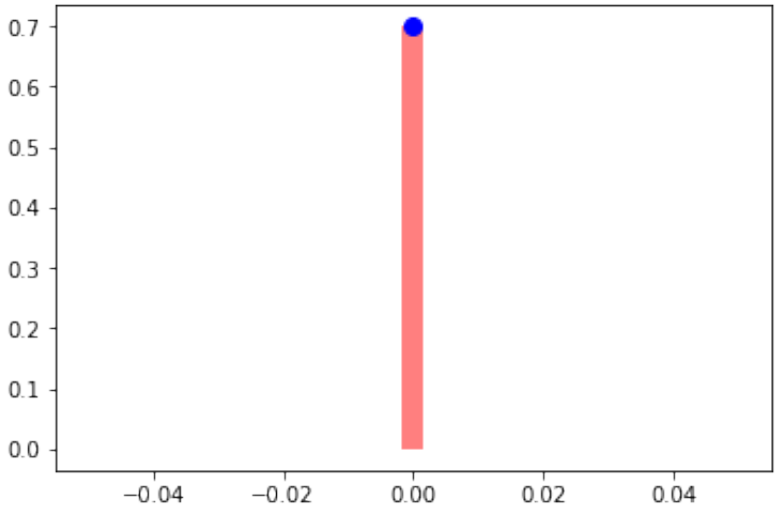
In [32]:
```
skew(exp)

# The Skewness for the exponential distribution fit is right skewed
and greater than normal distribution fit.
```

Out[32]: 1.2429523114568255

In [41]:
```
# Bernoulli Fit

from scipy.stats import bernoulli
import matplotlib.pyplot as plt
fig, ax = plt.subplots(1, 1)
#p=0.3 : Success
p = 0.3
mean, var, skew, kurt = bernoulli.stats(p, moments='mvsk')
x = np.arange(bernoulli.ppf(0.01, p),bernoulli.ppf(0.99, p))
ax.plot(x, bernoulli.pmf(x, p), 'bo', ms=8, label='bernoulli pmf')
ax.vlines(x, 0, bernoulli.pmf(x, p), colors='red', lw=10, alpha=0.5
)
r = bernoulli.rvs(p, size=100)
plt.show()
```



In [ ]:
```
#Yes the fit vary as a function of the true parameter because the r
eal data curve doesn't overlap completely with the predicted curve,
which shows the presence of the error in the prediction.
```

In [ ]:
```
# Purpose of the probability distribution is to find the risk invol
ved in the making the business decisions.
#In the real world consumer demand use random sampling from the pop
ulation.
#To make the decision more accurate we perform different types of t
he probability distribution to reduce the error.
#Depending upon the Type of business decision we perform respective
probability distribution fit to get more accurate prediction.
```