STAT-431: HW-3

Problem 1c)

In [19]:

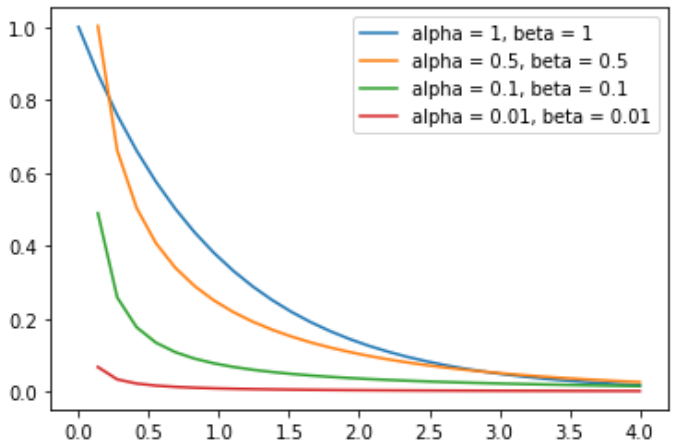
```
import numpy as np
import scipy.stats as stats
import matplotlib.pyplot as plt

#define x-axis values
x = np.linspace (0, 4, 30)

#calculate pdf of Gamma distribution for each x-value
y1 = stats.gamma.pdf(x, a=1, scale=1)
y2 = stats.gamma.pdf(x, a=0.5, scale=1/0.5)
y3 = stats.gamma.pdf(x, a=0.1, scale=1/0.1)
y4 = stats.gamma.pdf(x, a=0.01, scale=1/0.01)

#create plot of Gamma distribution
plt.plot(x, y1, label='alpha = 1, beta = 1')
plt.plot(x, y2, label='alpha = 0.5, beta = 0.5')
plt.plot(x, y3, label='alpha = 0.1, beta = 0.1')
plt.plot(x, y4, label='alpha = 0.01, beta = 0.01')

plt.legend()
#display plot
plt.show()
```



Problem 1d)

In [22]:

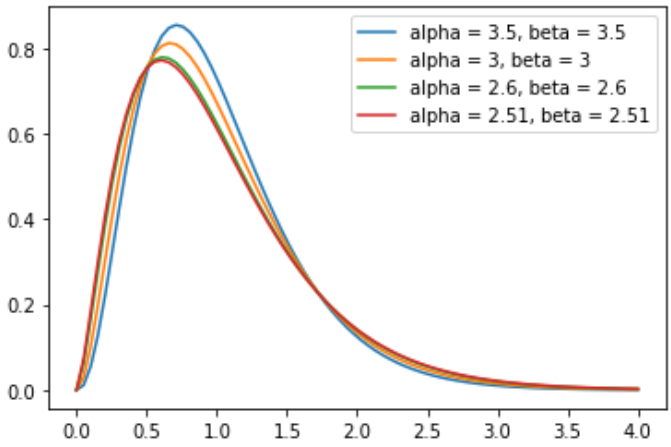
```
#define x-axis values
x = np.linspace (0, 4, 80)

#calculate pdf of Gamma distribution for each x-value
ya = stats.gamma.pdf(x, a=1+2.5, scale=1/(1+2.5))
yb = stats.gamma.pdf(x, a=0.5+2.5, scale=1/(0.5+2.5))
yc = stats.gamma.pdf(x, a=0.1+2.5, scale=1/(0.1+2.5))
yd = stats.gamma.pdf(x, a=0.01+2.5, scale=1/(0.01+2.5))

#create plot of Gamma distribution
plt.plot(x, ya, label='alpha = 3.5, beta = 3.5')
plt.plot(x, yb, label='alpha = 3, beta = 3')
plt.plot(x, yc, label='alpha = 2.6, beta = 2.6')
plt.plot(x, yd, label='alpha = 2.51, beta = 2.51')
```

```
plt.legend()

#display plot
plt.show()
```



In [ ]:

```
```