MATHEMATICS INNOVATIVE EXPERIMENT

QUESTION:

Rainfall Probability Estimation

NAME:

USN:

SECTION:

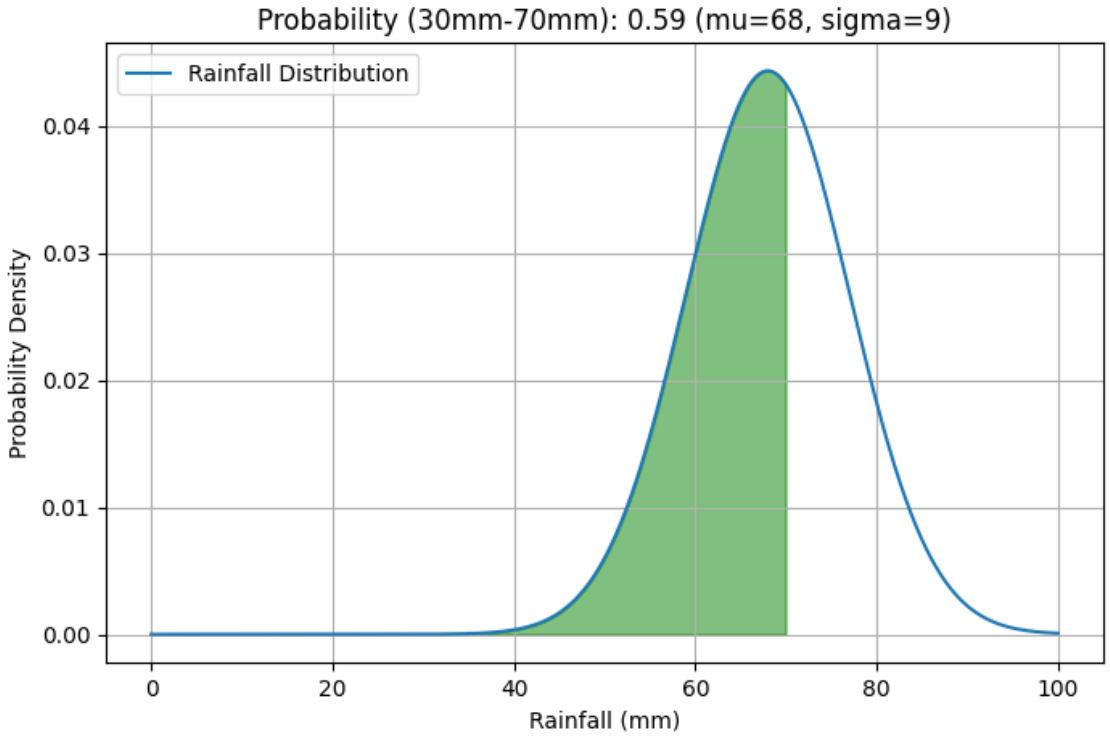
EXPERIMENT CODE:

```
import numpy as np
import scipy.integrate as spi
import matplotlib.pyplot as plt
from scipy.stats import norm

mu = 68
sigma = 9
pdf = lambda x: norm.pdf(x, mu, sigma)
prob, _ = spi.quad(pdf, 30, 70)
x = np.linspace(0, 100, 1000)
y = pdf(x)
plt.figure(figsize=(8, 5))
plt.plot(x, y, label="Rainfall Distribution")
plt.fill_between(x, y, where=(x>=30)&(x<=70), color="green", alpha=0.5)
plt.xlabel("Rainfall (mm)")
plt.ylabel("Probability Density")
plt.title(f"Probability: {prob:.2f}")
plt.legend()
plt.grid()
plt.show()
```

OUTPUT WITH GRAPH:

MATHEMATICS INNOVATIVE EXPERIMENT



RESULTS:

Normal Distribution Parameters:

Mean (mu): 68

Std Dev (sigma): 9

Probability (30mm-70mm): 0.5879