[5]:
```python
import numpy as np
import matplotlib.pyplot as plt

def normal_density(mean, variance, x):
    coefficient = 1 / np.sqrt(2 * np.pi * variance)
    exponent_term = np.exp(-(x - mean)**2 / (2 * variance))
    return coefficient * exponent_term

def integrate_normal_density(mean, variance, a, b, num_steps=10000):
    delta_x = (b - a) / num_steps
    x_values = np.linspace(a, b, num_steps)
    area = np.sum(normal_density(mean, variance, x_values) * delta_x)
    return area

def plot_normal_distribution(mean, variance, a, b, num_points=10000):
    x_coords = np.linspace(a, b, num_points)
    y_coords = normal_density(mean, variance, x_coords)

    plt.plot(x_coords, y_coords)
    plt.title('Normal Distribution')
    plt.xlabel('x')
    plt.ylabel('Density')
    plt.show()

# Example usage:
mean_value = 171
variance_value = 7.1**2
lower_limit = 162
upper_limit = 190

area_result = integrate_normal_density(mean_value, variance_value, lower_limit, upper_limit)
print("Integrated Area:", area_result)

# Uncomment the next line if you want to plot the normal distribution curve
# plot_normal_distribution(mean_value, variance_value, lower_limit, upper_limit)
```

```
Integrated Area: 0.8937539178438424
```