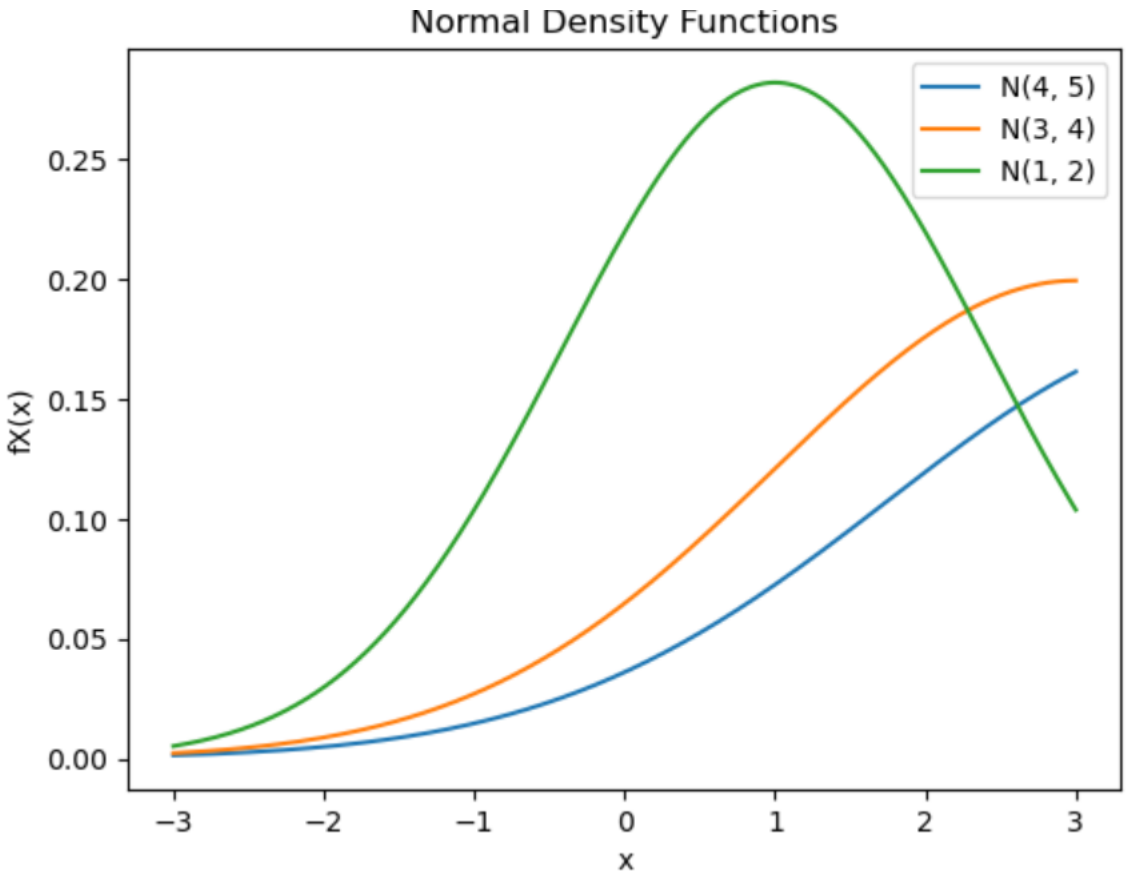
```python
import numpy as np
from scipy import integrate

def normal_density(mean, variance, x):
    std_dev = np.sqrt(variance)#amount of variation or dispersion in a set of values. The standard deviation determ
# Calculate the probability density function
    greg = 1 / (np.sqrt(2 * np.pi * variance)) * np.exp(-(x - mean)**2 / (2 * variance))
    return greg
def plot_normal_density(mean, variance, label, plot_range=(-3,3)):#Set the standard deviation range be equally
    #spaced from the mean value (3 before, 3 after)
    x_values = np.linspace(plot_range[0], plot_range[1], 1000)#preform 1000 steps
    y_values = normal_density(mean, variance, x_values)
    plt.plot(x_values, normal_density(mean, variance, x_values), label=label)

import matplotlib.pyplot as plt
def integration(mean, variance, a, b):
    num_points = 1000 #number of equally spaced divisions between interval from a to b
    x_values = np.linspace(a, b, num_points) # The points at which we evaluate the probability density function.
    delta_x = (b - a) / num_points #calculates the width of each interval
    result = delta_x * np.sum(normal_density(mean, variance, x_values[:-1] + delta_x / 2)) #calculates the midpoint
    #of each interval and finds probability
    return result

# Plotting normal_density function for different values of μ and σ^2
plot_normal_density(4, 5, label='N(4, 5)') #Can do any values
```

```python
# Plotting normal_density function for different values of μ and σ^2
plot_normal_density(4, 5, label='N(4, 5)') #Can do any values
plot_normal_density(3, 4, label='N(3, 4)')
plot_normal_density(1, 2, label='N(1, 2)')
plt.title('Normal Density Functions')
plt.xlabel('x')
plt.ylabel('fX(x)')#represents probability density function
plt.legend()
plt.show()

# Calculating the probability of height between 162cm and 190cm for average male height
mean_height = 171
variance_height = 7.1**2
probability = integration(mean_height, variance_height, 162, 190)

print(f"The probability of the global male height range is:", probability)
```




```
The probability of the global male height range is: 0.8929125750448101
```