**g) Write a program to show how the trapezoidal rule of integration works in Python**

import numpy as np

def trapezoidal\_rule(f, a, b, n):

x = np.linspace(a, b, n+1)

y = f(x)

h = (b - a) / n

integral = (h/2) \* (y[0] + 2 \* sum(y[1:-1]) + y[-1])

return integral

# Define the function to integrate

f = lambda x: x\*\*2

# Integration interval

a = 0

b = 1

# Number of trapezoids

n = 1000

# Calculate the integral

result = trapezoidal\_rule(f, a, b, n)

print(f'Approximate integral: {result}')