Objective

The objective of running this code is to obtain an approximation of the definite integral of the function x 2 x 2 over the interval [200 , 300] [200,300] using the midpoint rule with a specific number of subintervals.This code computes an approxiamtion of the definite integral of the function f(x)=x^2 over a specifies interval using the midpoint rule. The result is printed to the console.

#

In [2]:
```
def f(x):
    return x**2

def midpoint_rule(a, b, n):
    h = (b - a) / n
    integral_sum = 0

    for i in range(n):
        midpoint = a + (i + 0.5) * h

        integral_sum += f(midpoint) * h

    return integral_sum

a = 200
b = 300
n = 100

approx_integral = midpoint_rule(a, b, n)
print("Approximated value of the integral:", approx_integral)
```

```
Approximated value of the integral: 6333325.0
```

Conclusion

The midpoint rule provides a simple yet effective method for approximating definite integrals numerically. The Python implementation presented in this report offers a practical tool for calculating integral values, particularly when analytic solutions are not readily available.

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