Homework 4

Exercise 1. Approximating the following integral:

$$\int_a^b \frac{1}{x} dx$$

By formula

$$\int_a^b f(x)dx \approx \frac{\Delta x}{3} \sum_{j=1}^{n/2} [f(x_{2j-2}) + 4f(x_{2j-1}) + f(x_{2j})]$$
$$= \frac{\Delta x}{3} [f(x_0) + 4\sum_{j=1}^{n/2} f(x_{2j-1}) + 2\sum_{j=1}^{n/2-1} f(x_{2j}) + f(x_n)],$$

where a,b, and even number n from the user (Don't use if statement.)

Exercise 2.   Write a python program to check whether the credit card number is valid or invalid by the Luhn algorithm (https://en.wikipedia.org/wiki/Luhn_algorithm)

Exercise 3. Let $A(x) = 1 + 2x + 3x^2 + \cdots nx^{n-1}$. For x and n from the user, calculate A(x).

Exercise 4. Let the expression "A(x,y) =x^2+4x+y^2+7x-5" in latex form. For x, y from the user, calculate A(x,y).