Bottom-up design:

1. Output:
   1. area from using 4 different methods to calculate
   2. the times of calculating
2. function of calculatingA close up of a device

   Description automatically generated
   1. function of left point (calculate the sum of area by inputting the function, start point and end point (left point))
      1. counting number
      2. using for loop for the sum of the area (the width of each small rectangle)
      3. the difference between two area is less than 10\*\*-6
      4. output: counting number and the sum of area
   2. function of right point (calculate the sum of area by inputting the function, start point and end point (right point))
      1. counting number
      2. using for loop for the sum of the area (the width of each small rectangle)
      3. the difference between two area is less than 10\*\*-6
      4. output: counting number and the sum of area
   3. function of mid-point (calculate the sum of area by inputting the function, start point and end point (midpoint))
      1. counting number
      2. using for loop for the sum of the area (the width of each small rectangle)
      3. the difference between two area is less than 10\*\*-6
      4. output: counting number and the sum of area
   4. function of trapezium (calculate the sum of area by inputting the function, start point and end point)
      1. counting number
      2. using for loop for the sum of the area (the width of each small trapezium)
      3. the difference between two area is less than 10\*\*-6
      4. output: counting number and the sum of area
3. function, start point, and end point
   1. user input
      1. using input function to let user input the start point and end point
      2. using while loop to let user input the function by inputting the highest power number and each coefficient numbers.
   2. Print the instruction to user to better understand the way of inputting

Top-down design:

1. User input the function, the start point and end point
   1. user input
      1. using input function to let user input the start point and end point
      2. using while loop to let user input the function by inputting the highest power number and each coefficient numbers.
   2. Print the instruction to user to better understand the way of inputting
2. function of calculating the total area of function
   1. function of left point (calculate the sum of area by inputting the function, start point and end point (left point))
      1. counting number
      2. using for loop for the sum of the area (the width of each small rectangle)
      3. the difference between two area is less than 10\*\*-6
      4. output: counting number and the sum of area
   2. function of right point (calculate the sum of area by inputting the function, start point and end point (right point))
      1. counting number
      2. using for loop for the sum of the area (the width of each small rectangle)
      3. the difference between two area is less than 10\*\*-6
      4. output: counting number and the sum of area
   3. function of mid-point (calculate the sum of area by inputting the function, start point and end point (midpoint))
      1. counting number
      2. using for loop for the sum of the area (the width of each small rectangle)
      3. the difference between two area is less than 10\*\*-6
      4. output: counting number and the sum of area
   4. function of trapezium (calculate the sum of area by inputting the function, start point and end point)
      1. counting number
      2. using for loop for the sum of the area (the width of each small trapezium)
      3. the difference between two area is less than 10\*\*-6
      4. output: counting number and the sum of area
3. output the result