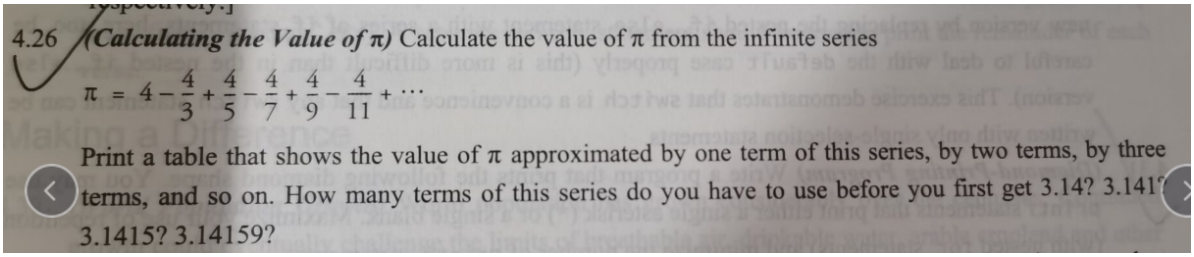
4.26

题目



4.26 *(Calculating the Value of π)* Calculate the value of π from the infinite series

$$\pi = 4 - \frac{4}{3} + \frac{4}{5} - \frac{4}{7} + \frac{4}{9} - \frac{4}{11} + \cdots$$

Print a table that shows the value of π approximated by one term of this series, by two terms, by three terms, and so on. How many terms of this series do you have to use before you first get 3.14? 3.141? 3.1415? 3.14159?

参考代码：

> 代码不完全按照题目要求。

```
//bt suzhangs
#include <stdio.h>
#include <math.h>
int main()
{
    int n;
    double sum = 4;
    int state1 =0 ;
    int state2 =0 ;
    int state3 =0 ;
    int state4 =0 ;
    printf("Please input the n: ");
    scanf("%d",&n);
    if(n == 1){
    printf("4\n");
    }
    else{
        int i ,k = 3;

        for(i=0;i < n;i++)
            {
            sum =  sum -(pow(-1,i) * (4.0 / k));
            k = k + 2;
            // printf("%lf ",sum);
                    if(((3.14 <=sum ) && (sum < 3.15))&&(state1==0))
                    {
                    printf("3.14       %d\n",i);
                    state1 = 1;
                    printf("%lf\n\n",sum);
                    }
                    else if(((3.141<=sum)&&(sum<3.142))&&(state2==0)){
                            printf("3.141        %d\n",i);
                            state2 = 1;
                            printf("%lf\n\n",sum);
                    }
                    else if(((3.1415<=sum) && (sum<3.1416))&&(state3==0)){
                            printf("3.1415          %d\n",i);
                            state3 = 1;
```

```
                        printf("%lf\n\n",sum);
                }
                else if(((3.14159<=sum)&&(sum<3.14160))&&(state4==0)){
                        printf("3.14159        %d\n",i);
                        state4 = 1;
                        printf("%lf\n\n",sum);
                }
                else{
                }

        }
        }

        return 0;

}
```