/\*simpson's 1/3 rule\*/

#include<stdio.h>

#include<math.h>

float f(float); //function declaration

int main()

{

float up,lo,h,y0,yn,in,z,se=0,so=0,result,y;

int i;

//user input

printf("Enter the upper limit\n");

scanf("%f",&up);

printf("Enter the lower limit\n");

scanf("%f",&lo);

printf("Enter the interval\n");

scanf("%f",&in);

h=(up-lo)/in;

y0=f(lo); //first ordinate

printf("%f\n",y0);

yn=f(up); //last ordinate

printf("%f\n",yn);

z=lo+h;

for(i=1;i<(in);i++) //loop upto n-1

{

y=f(z);

printf("%f\n",y);

if(i%2==0) //even

{

se=se+y;

}

else if(i%2!=0) //odd

{

so=so+y;

}

z=z+h;

}

result=(h/3)\*((y0+yn)+4\*so+2\*se); // calculating final result

printf("The result of simpson's 1/3 rule is %.5f\n",result);

return 0;

}

float f(float x) //function

{

return (tan(exp(x)));

}

