format bank

1 F\_15=610

F(1)

F(2)

F(4)

F(15)

2

As n increases, the running time of the program tends to increase, and the ratio gets closer to the golden ratio. And the program outputs NAN when n is large enough, probably because there is an overflow

format long

tic

f(1)

toc

tic

f(12)

toc

tic

f(122)

toc

tic

f(1111)

toc

tic

f(1131)

toc

tic

f(11111)

toc

3

prr(3,4,-11)

4 The output is pi when m=n, but when m!=n, the result is 0 and -pi ,whether this is 0 depends on whether the synthetic function is odd or even, which is related to the parity of m,n; the synthetic function is an even function, its positive and negative nature exists and is the same as the positive and negative nature of m\*n.

format bank

inter(1,1) %m==n m>0 n>0

inter(3,3) %m==n m>0 n>0 odd

inter(4,4) %m==n m>0 n>0 even

inter(-1,-1) %m==n m<0 n<0

inter(1,-1) %m!=n m>0 n<0

inter(-1,1) %m!=n m<0 n>0

inter(-0.5,0.5) %m!=n m<0 n>0

inter(1,2)

inter(2,3) %m!=n m>0 n>0

inter(2,-3) %m!=n m>0 n<0

inter(-2,-3) %m!=n m<0 n<0

inter(-2,-4) %m!=n m<0 n<0 even

5

format short

Mat = Gem(5)

6

format short

DetS(9,100) %test

DetS(900,950)

7 "the sum is 1.468750e+00"

format bank

main(1,0.5,5)

8 the Output is 0, it is because that the smallest distance here that can be distinguished by matlab is 16.

format bank

(2^56+2)-2^56

2^56+2

eps(2^56)

9

m=-2:0.1:2;

g=@(g,k) g^3 + k\*g^2 + g;

y1=[];

y2=[];

y3=[];

for i=m

y1 = [y1,g(i,1)];

end

for i=m

y2 = [y2,g(i,2)];

end

for i=m

y3 = [y3,g(i,3)];

end

hold on

plot(m,y1,m,y2,m,y3)

legend(["k=1","k=2","k=3"])

title({'$Plot \, of \, y=x^3+kx^3+x$'},'Interpreter','latex')

xlim([-2 2])

ylim([-10 10])

set(gca,'xtick',-2:0.5:2)

set(gca,'ytick',-10:2:10)

xlabel("x")

ylabel("y")

grid on

hold off

figure

10

m = 1:10;

n=m;

for i=m

n(i) = fibonacci(i);

end

hold off

scatter(m, n,"filled")

function F = F(n) %1

d = (1+sqrt(5))/2;

F = (d^n-(-d)^-n)/(sqrt(5));

disp(F)

end

function s = f(n) %2

s = fibonacci(n)/fibonacci(n-1);

disp(s)

end

function prr(g,f,c) %3

sprintf("Radius of this circle is %d",finr(g,f,c))

end

function r = finr(g,f,c) %subfunction

r2 = g^2+f^2 -c ;

if r2 >= 0

r=sqrt(r2);

end

end

function F = inter(m,n) %4

F = integral(@(x) sin(m\*x).\*sin(n\*x),-pi,pi);

end

function Cyclic1 = Gem(n) %5

Cyclic1 = zeros(n);

for i=1:n

for j = 1:n

if xor((i==j), n-i+1==j)

Cyclic1(i,j) = 1;

end

if xor((i==j+2),(i+2==j))

Cyclic1(i,j) = 1;

end

end

end

end

function DetS(a,b) %6

if a == b

return

end

r=a;

Squre = [];

while r < b-1 %Out b

r=r+1; %Out a

if sqrt(r) == fix(sqrt(r))

Squre = [Squre,fix(sqrt(r))];

end

end

if size(Squre)==0

sprintf('There are no square numbers')

else

sprintf('There are squre numbers:')

disp(Squre)

end

end

function main(a,r,n) %7

if (a==0)||(r==0) % illegal

return

end

s = GP(r,n);

sprintf("the sum is %d",s\*a)

function Sn = GP(r,n) %subfunction

if n==1 % bottom & return

Sn = 1;

return

end

Sn = r^n + GP(r,n-1);

end

end