

Corrigé du test numéro 3 de compléments d'analyse numérique

Exercice 1

1)

```
function y=f(x)
y=x+exp(-x);
endfunction
```

2)

```
function x=iteree(xk,xk1)
x=xk-(xk-xk1)*f(xk)/(f(xk)-f(xk1));
endfunction
```

3)

```
function xk=newtonmod(k)
xk=0;
xk1=1;
for i=1 :k
x=iteree(xk,xk1);
xk1=xk;
xk=x;
end
endfunction
```

Exercice 2

1)

```
function s=integrale(n,fi)
s=0;
for k=0 :(n-2)
s=s+(fi(k+1)+fi(k+3)+4*fi(k+2))/12;
end
s=s/(n-1);
endfunction
```

Exercice 3

```
function x=substitution(A,y,n)
x=zeros(n,1);
x(n)=y(n)/A(n,n);
i=n-1;
while (i > 0)
s=0;
for j=(i+1) :n
s=s+A(i,j)*x(j);
end
x(i)=(y(i)-s)/A(i,i);
```

2

```
i=i-1;  
end  
endfunction
```

Exercice 4

```
function [ak,bk] = tri(a,b,k)  
ak=a;  
bk=b;  
for i=1 : k  
    m1=(2*ak+bk)/3;  
    m2=(ak+2*bk)/3;  
    if (f(ak) * f(m1)) <= 0  
        ak=ak;  
        bk=m1;  
    else  
        if (f(m1) * f(m2)) <= 0  
            ak=m1;  
            bk=m2;  
        else  
            if (f(m2) * f(bk)) <= 0  
                ak=m2;  
                bk=bk;  
            else  
                error ('l'intervalle de depart n'est pas bien selectionne')  
            end  
        end  
    end  
end  
endfunction
```