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## Correction du TP 1

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### Exercice 1

#### Question 1.5 : Programme exo1\_5.sce

```
//serie de Fourier de la fonction impaire f(t)= 1 sur [0,pi]
clear
deff('y=f(t)', 'y=-2*pmodulo(floor(t/%pi),2)+1')
t=[-3*pi/2:0.0001:3*pi/2];
n=10;
S=zeros(t); //initialisation de S_n(t)
for k=0:n
    S=S+(4/%pi)*sin((2*k+1)*t)/(2*k+1);
    clf
plot2d(t', [S' f(t')])
titre=strcat(['n = ', string(k)])
xtitle(titre, 't', 'y')
halt()
end
```

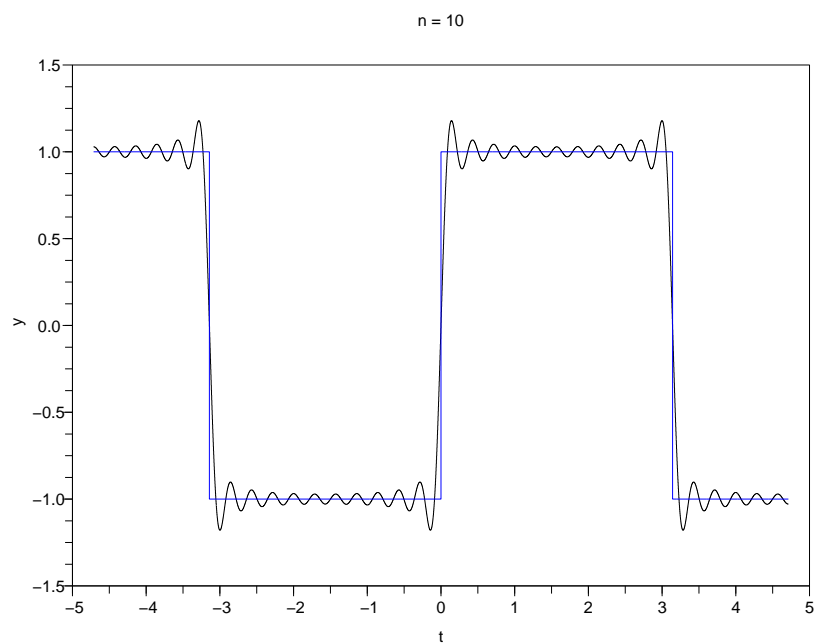


Figure 1: Exécution de exo1\_5.sce (cas  $n = 10$ )

#### Question 1.9 : Fonction Mn.sci

```

function MM=Mn(n)
M=0;
tn=%pi/(2*(n+1));
for k=0:n
    M=M+(4/%pi)*sin((2*k+1)*tn)/(2*k+1);
end
MM=M;
endfunction

```

### Programme exo1\_9.sce

```

//phenomene de Gibbs : calcul de S_n(t_n)
clear
lines(0)
getf('Mn.sci')
n=30;
for k=0:n
    M=Mn(k)
end
deff('y=g(t)', 'y=(2/%pi)*sin(t)./t')
Mapp=intg(0.0001,%pi,g)

```

### Dernières lignes de l'exécution de exo1\_9.sce

```

M =

    1.1790861
M =

    1.1790788
M =

    1.1790723
M =

    1.1790665
Mapp =

    1.1789161

```