Muestreo

Para la señal:

$$f_1(t) = \sin(2\pi\ 10t) \tag{1}$$

Se obtuvieron las siguientes gráficas:

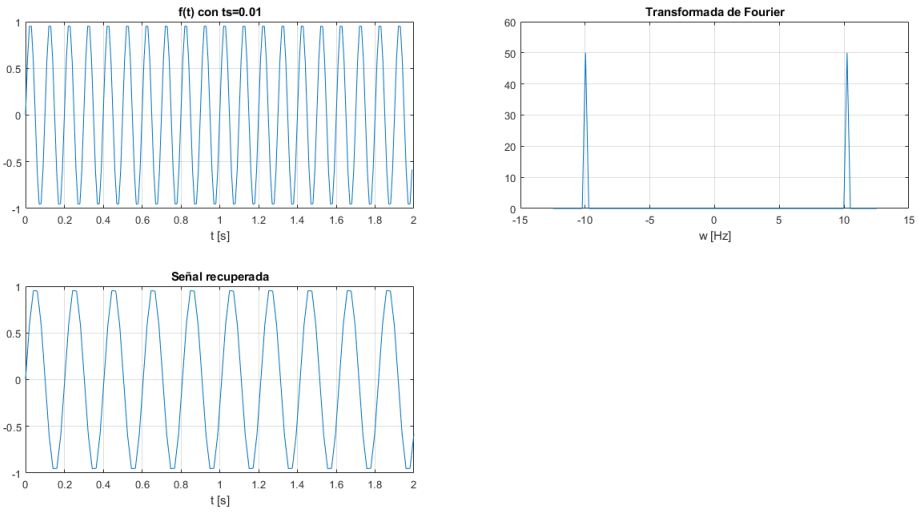

Figura 1: $f_s = 100Hz$

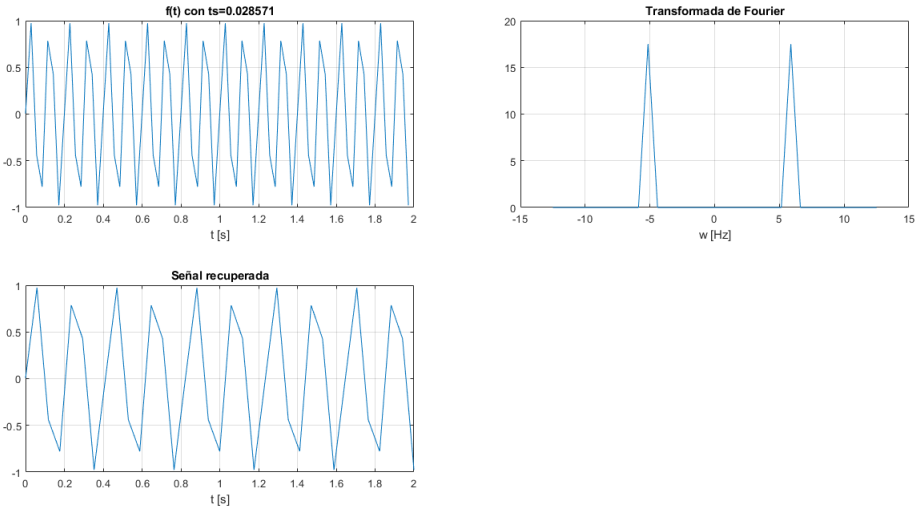

Figura 2: $f_s = 35Hz$

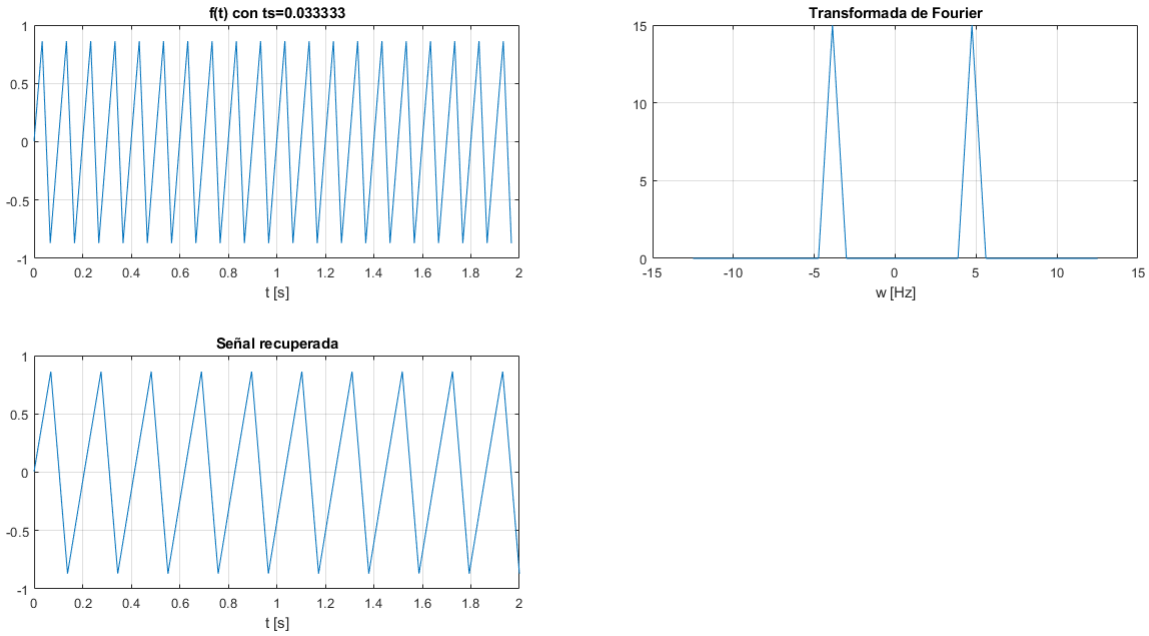

Figura 3: $f_s = 30Hz$

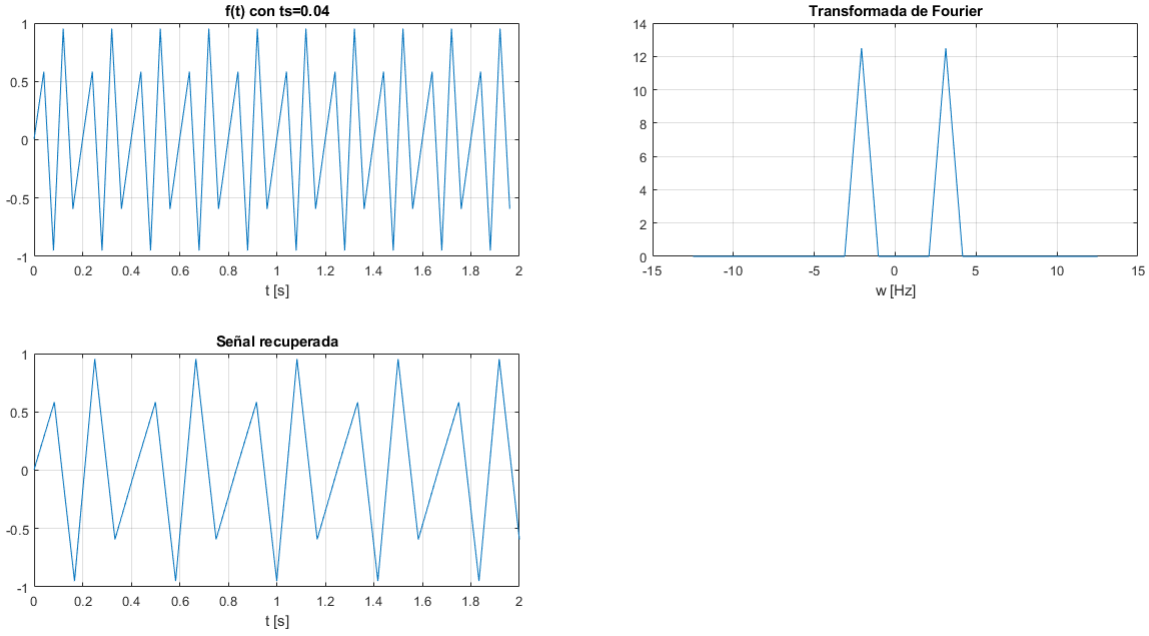

Figura 4: $f_s = 25Hz$

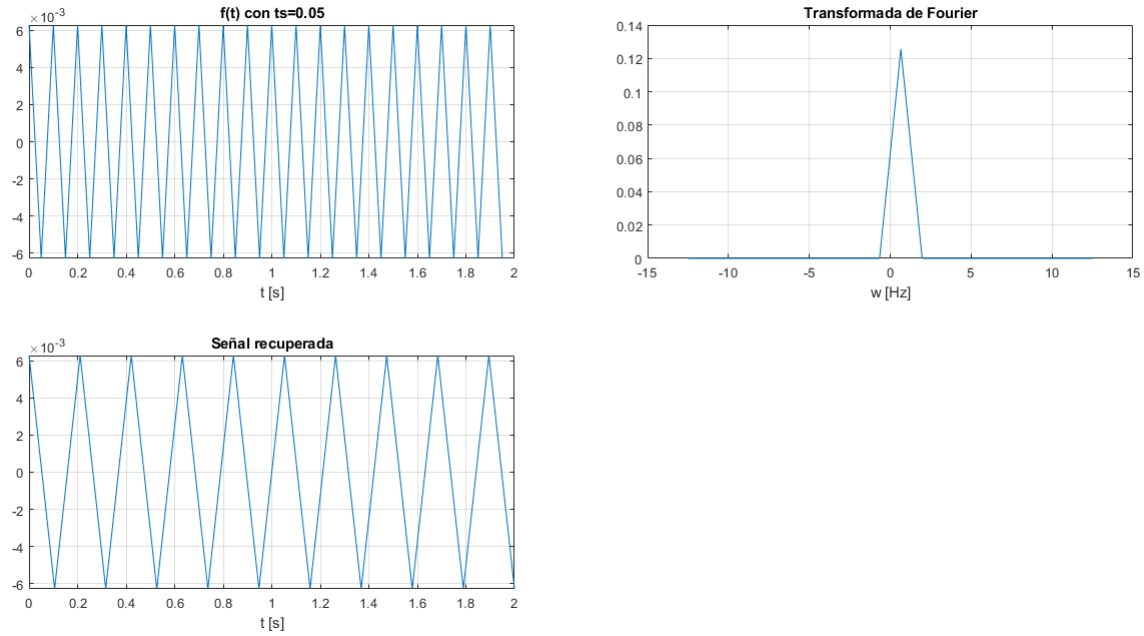

Figura 5: $f_s = 20Hz$

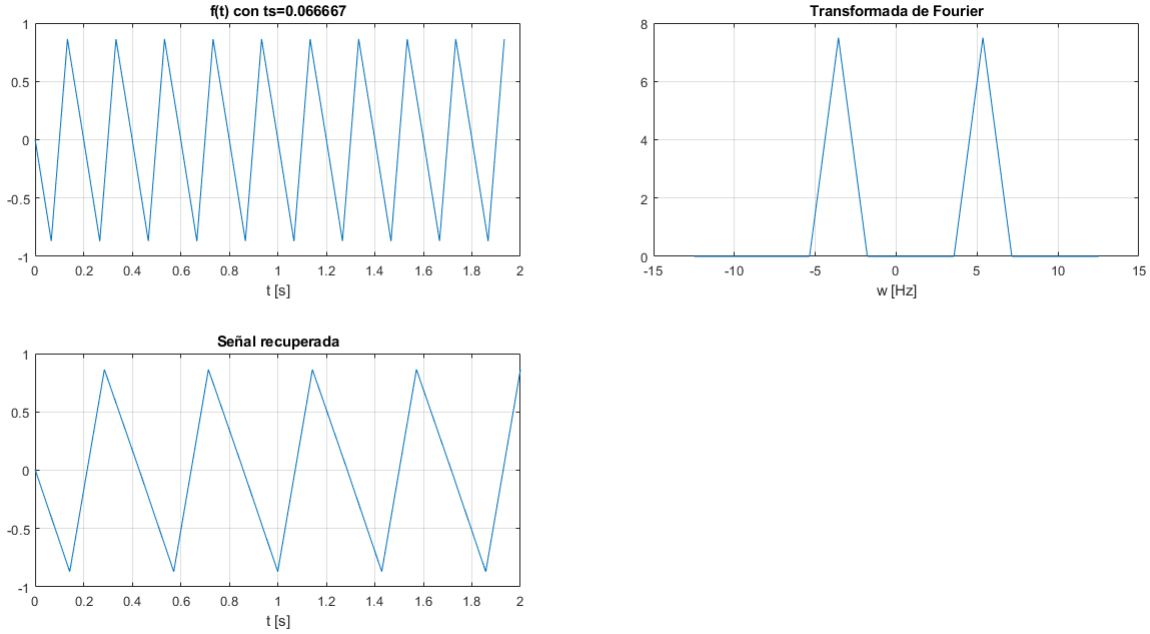

Figura 6: $f_s = 15Hz$

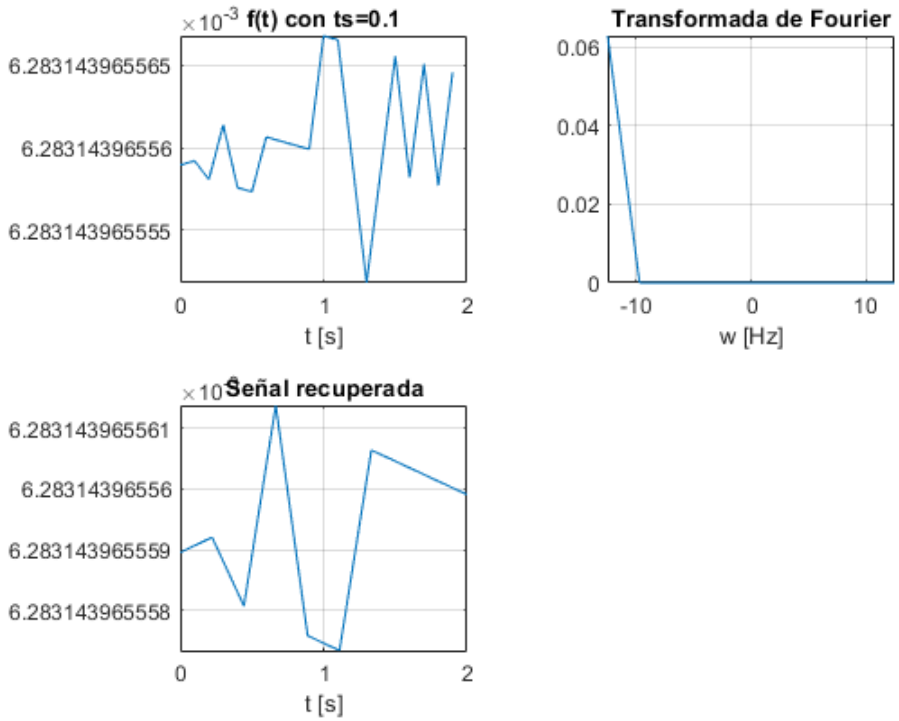

Figura 7: $f_s = 10Hz$

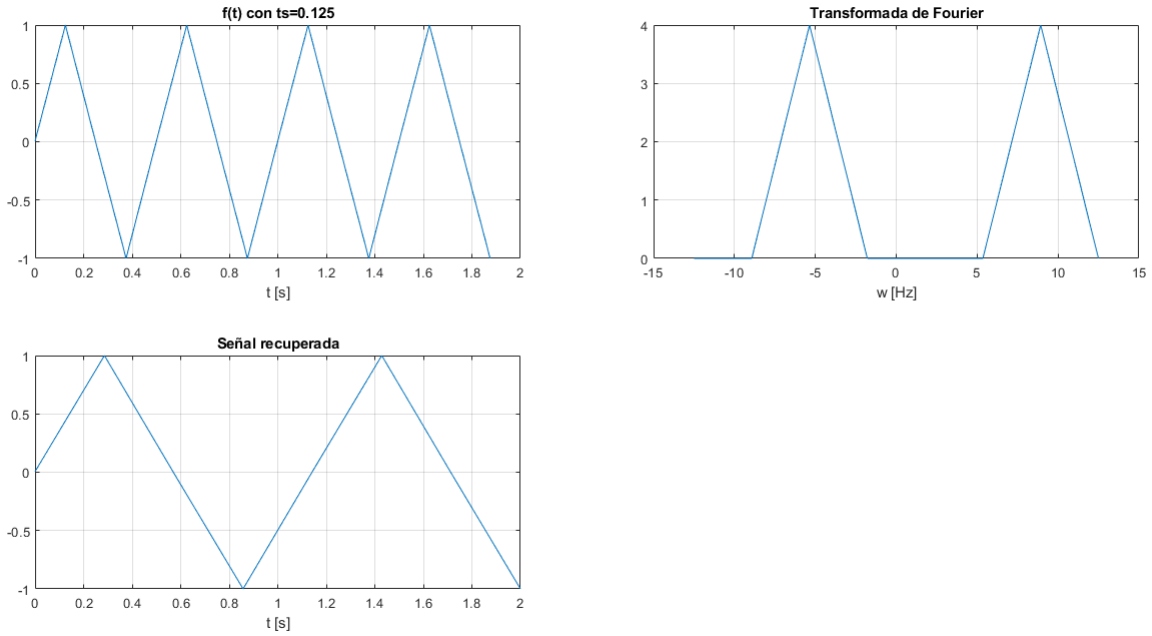

Figura 8: $f_s = 8Hz$

Para la señal:

$$f_1(t) = \sin(2\pi\ 30t) \tag{2}$$

Se obtuvieron las siguientes gráficas:

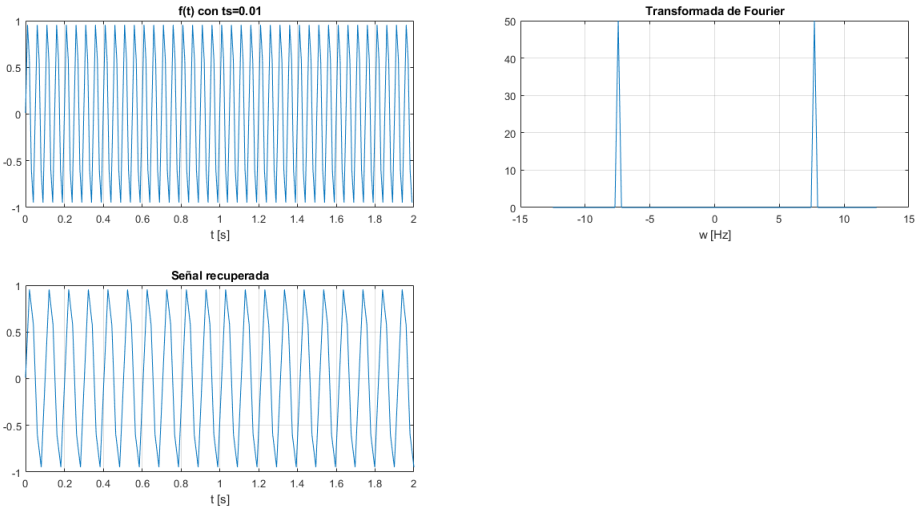

Figura 9: $f_s = 100Hz$

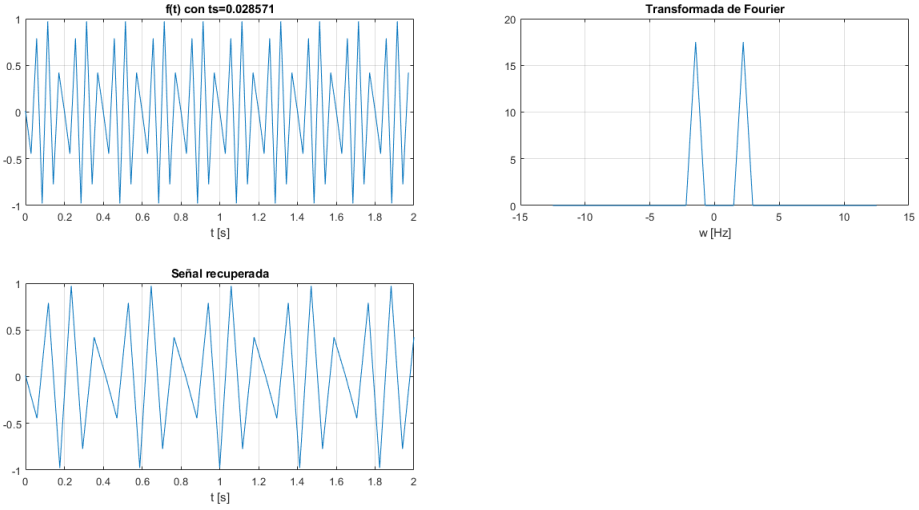

Figura 10: $f_s = 35Hz$

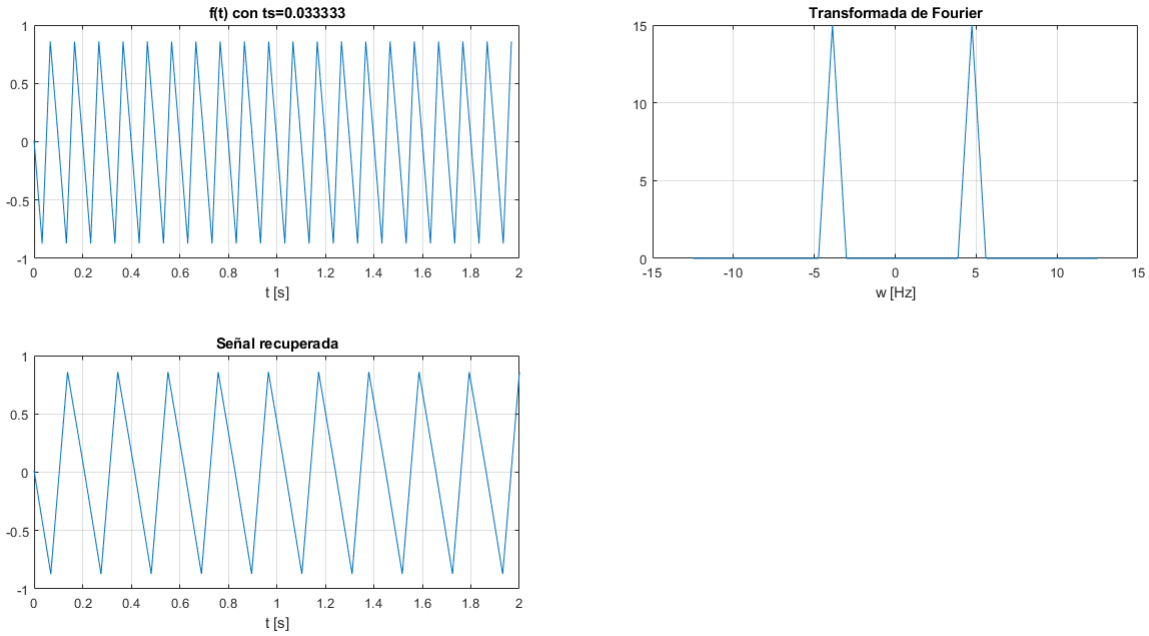

Figura 11: $f_s = 30Hz$

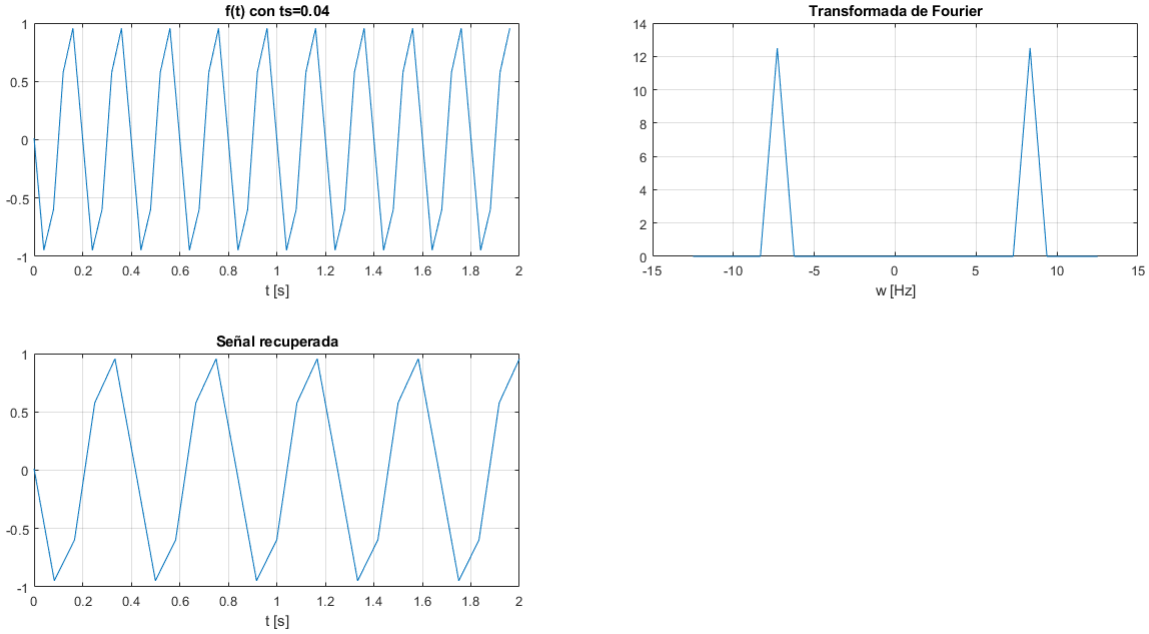

Figura 12: $f_s = 25Hz$

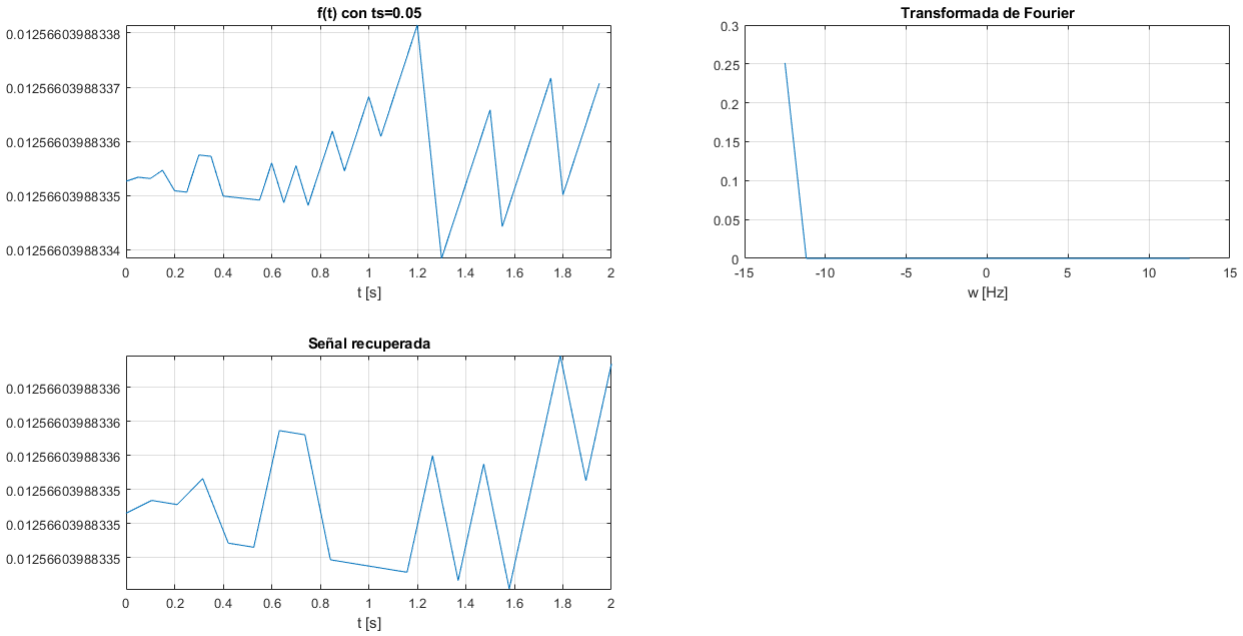

Figura 13: $f_s = 20Hz$

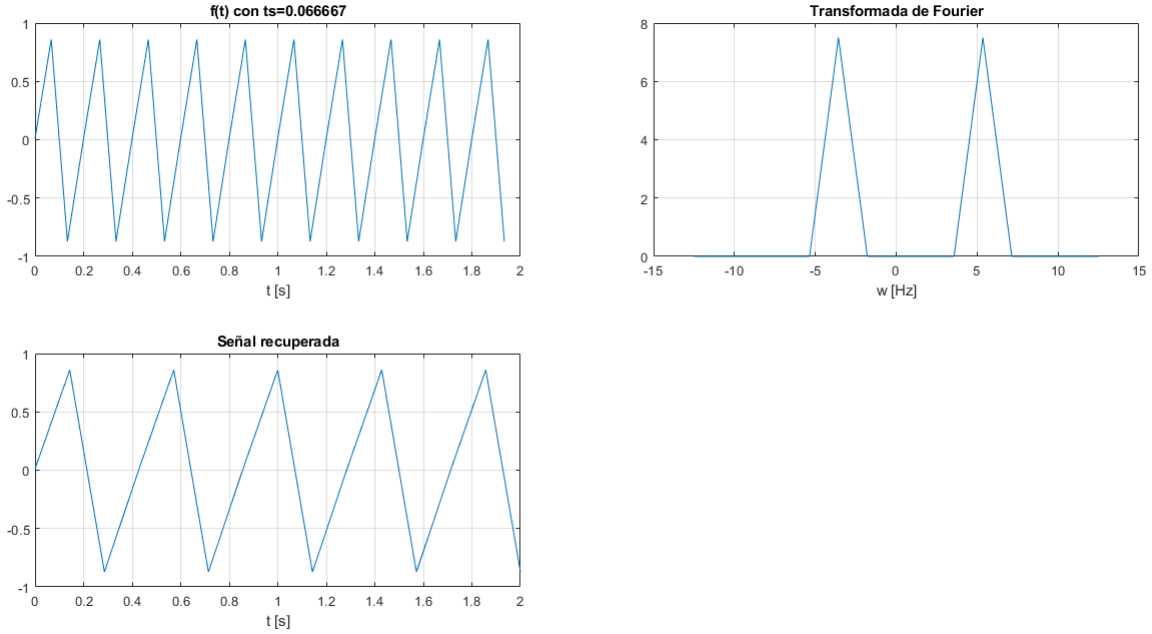

Figura 14: $f_s = 15Hz$

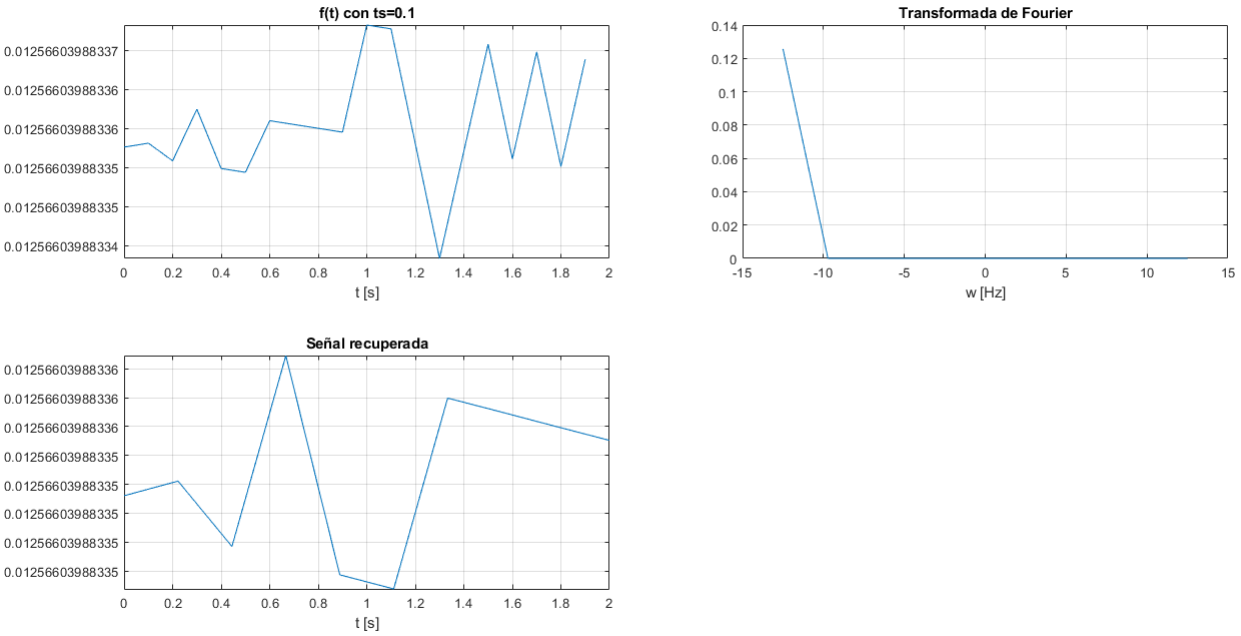

Figura 15: $f_s = 10Hz$

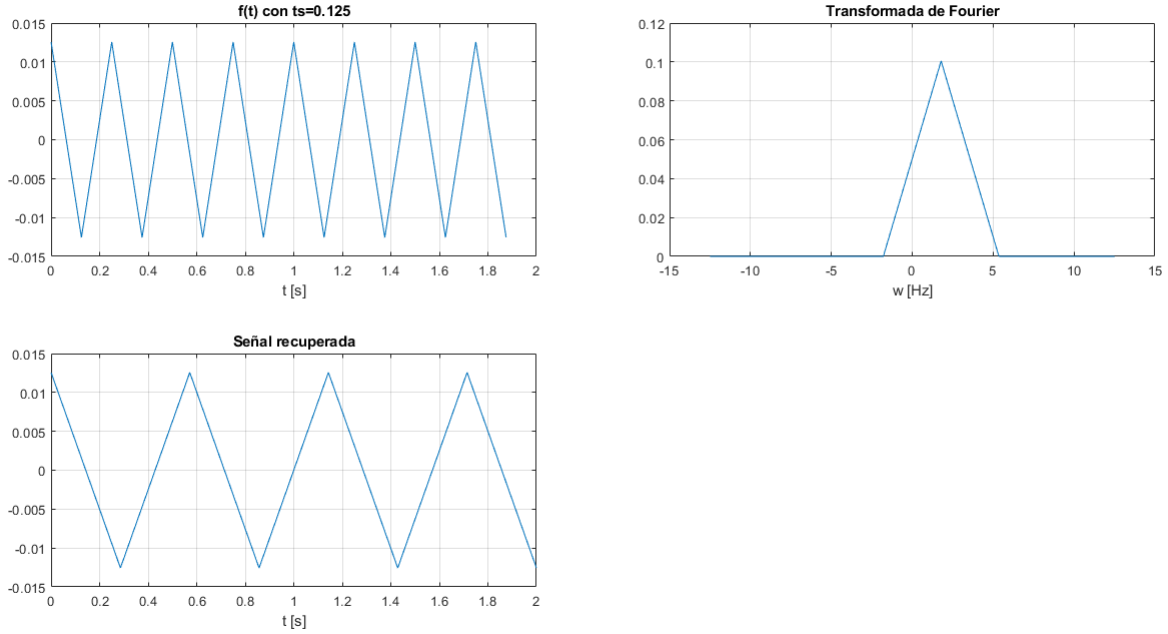

Figura 16: $f_s = 8Hz$

Para la señal:

$$f_1(t) = \sin(2\pi\ 30t) \tag{3}$$

Se obtuvieron las siguientes gráficas:

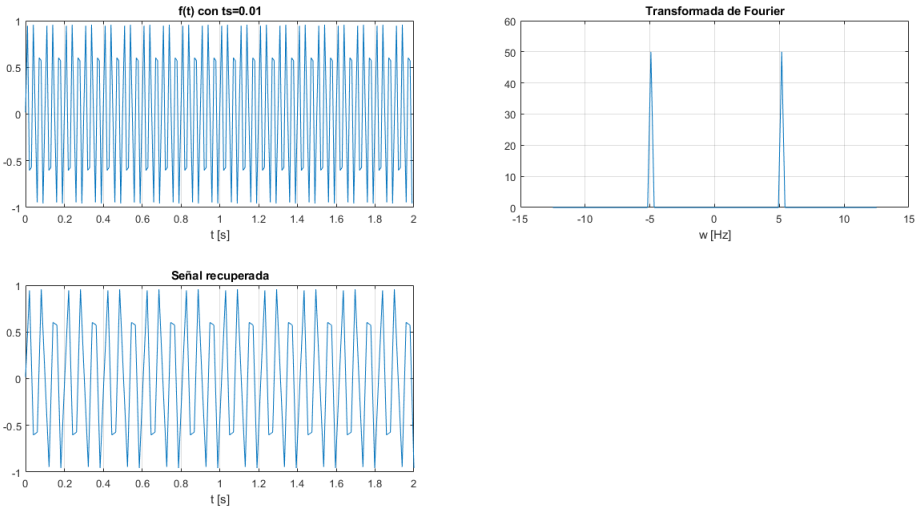

Figura 17: $f_s = 100Hz$

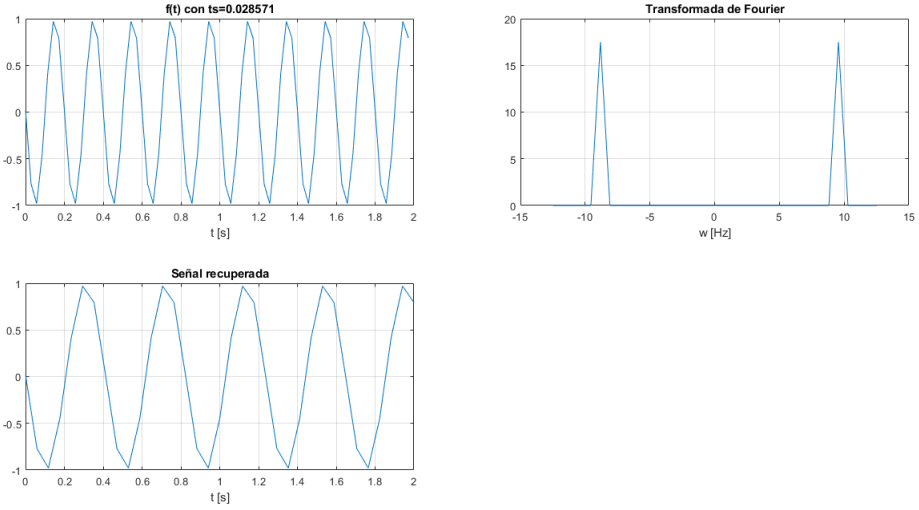

Figura 18: $f_s = 35Hz$

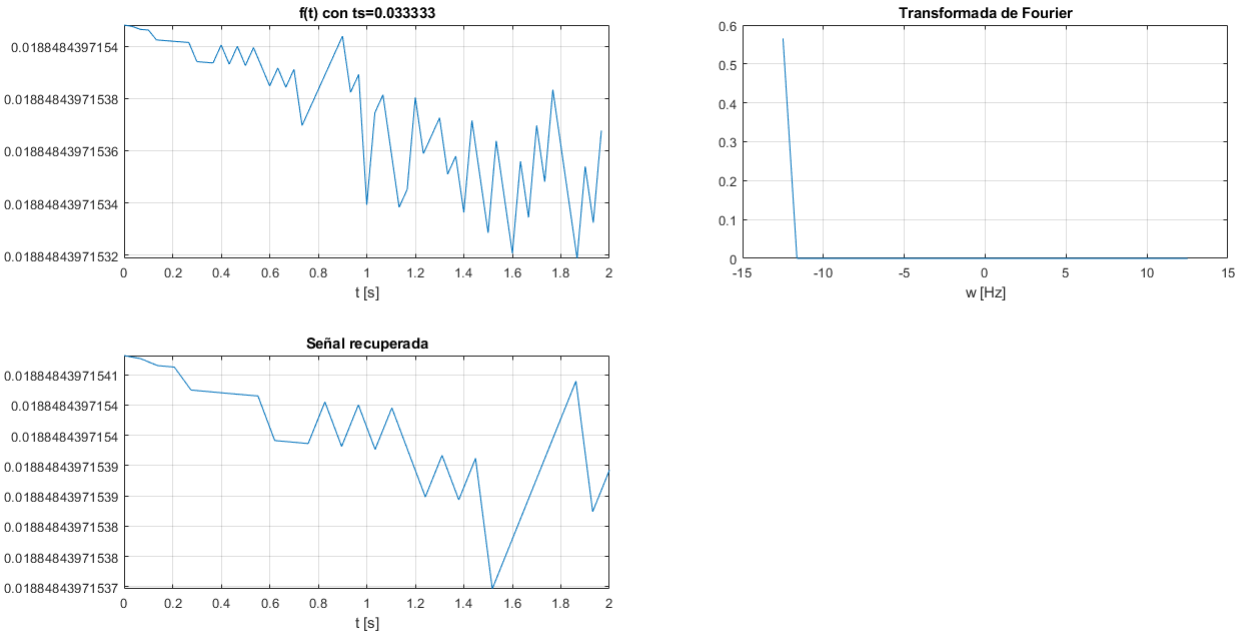

Figura 19: $f_s = 30Hz$

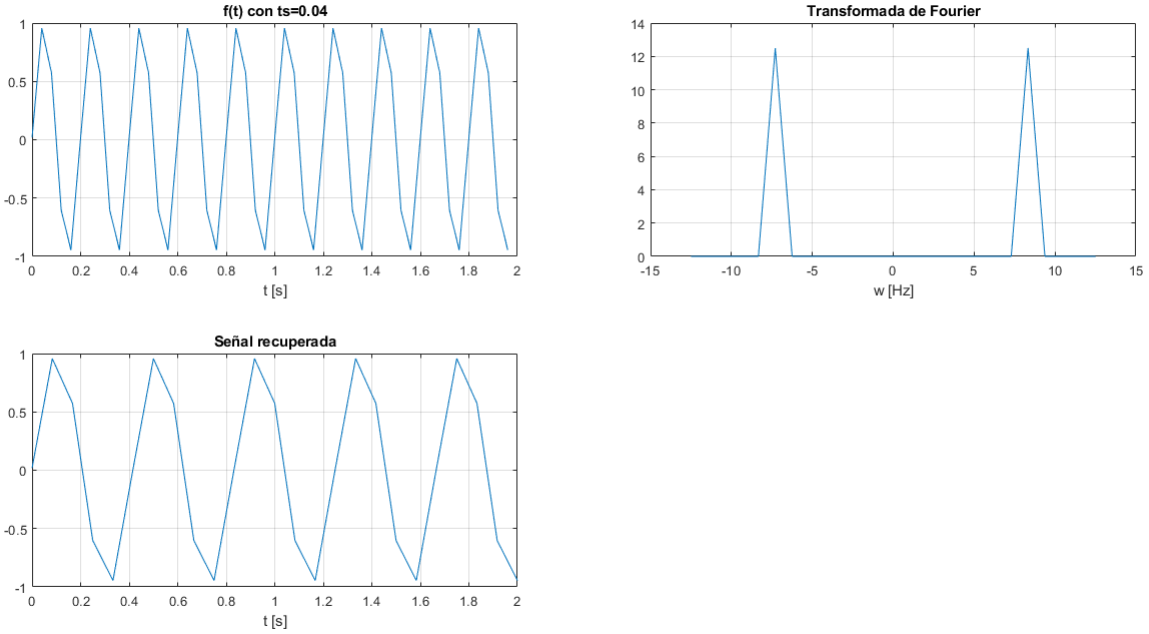

Figura 20: $f_s = 25Hz$

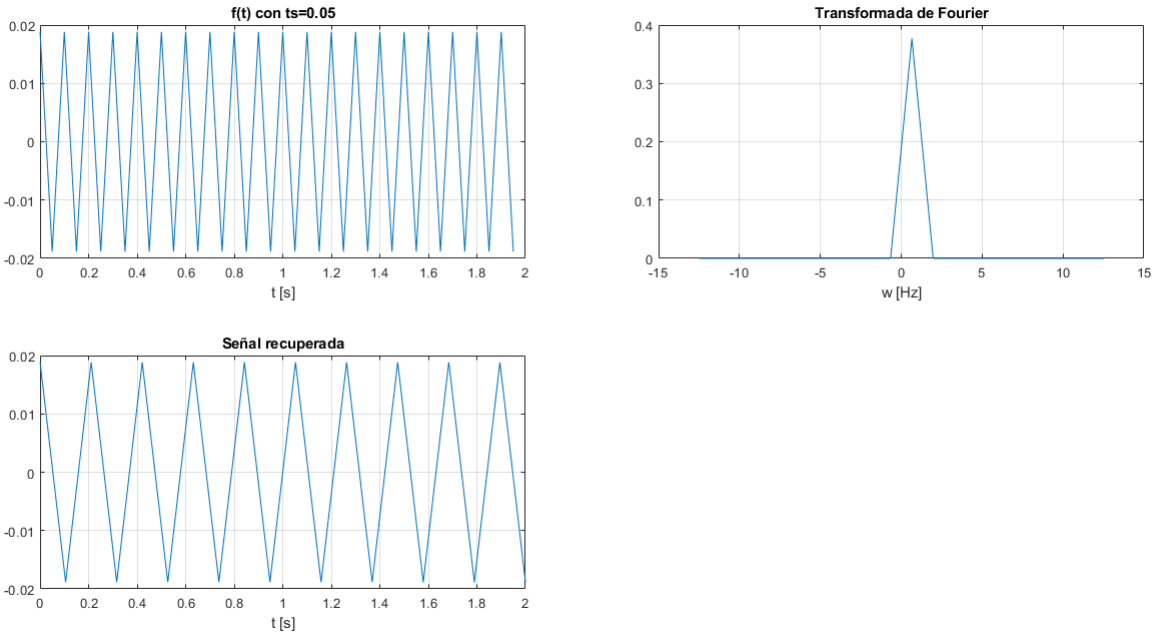

Figura 21: $f_s = 20Hz$

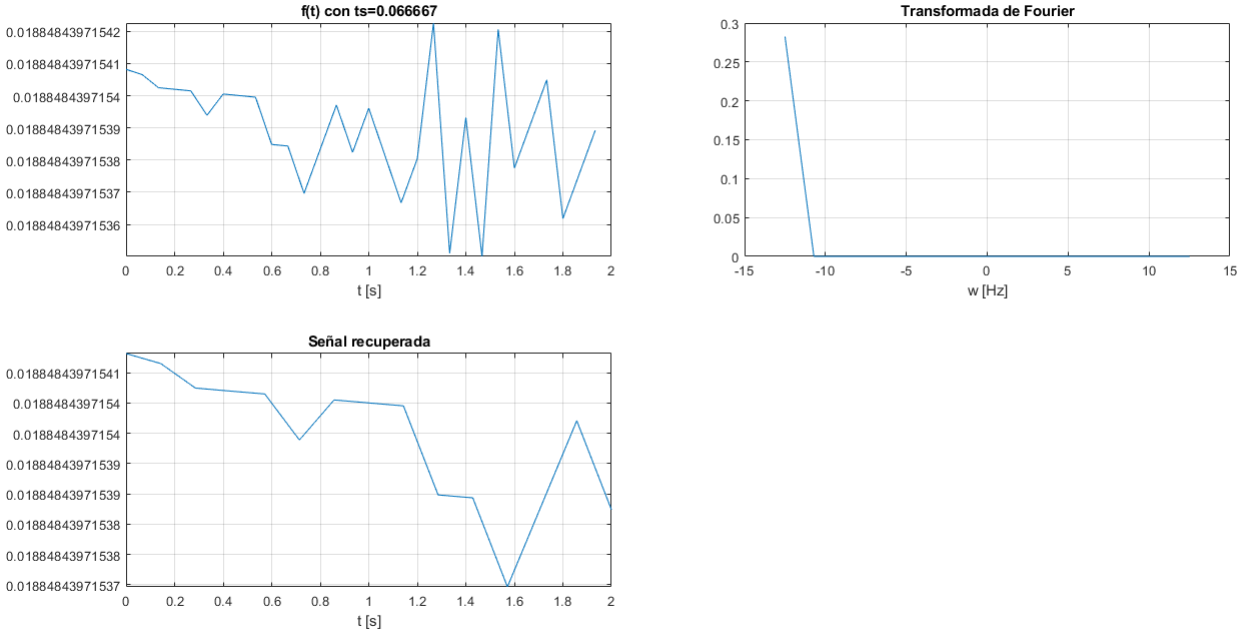

Figura 22: $f_s = 15Hz$

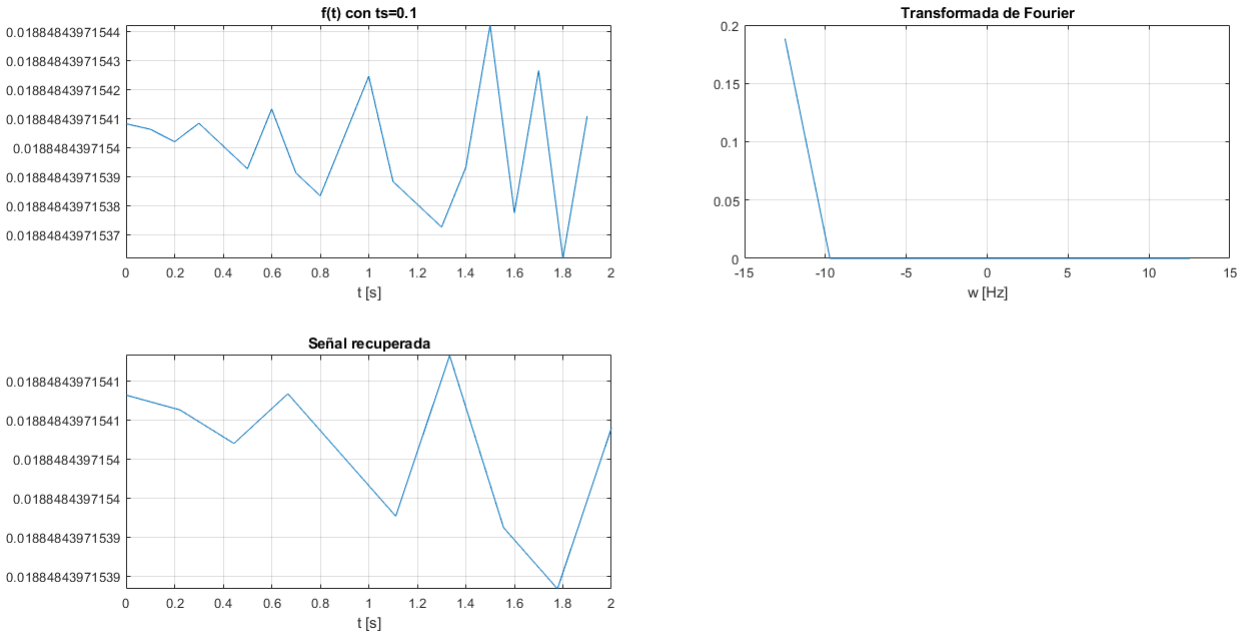

Figura 23: $f_s = 10Hz$

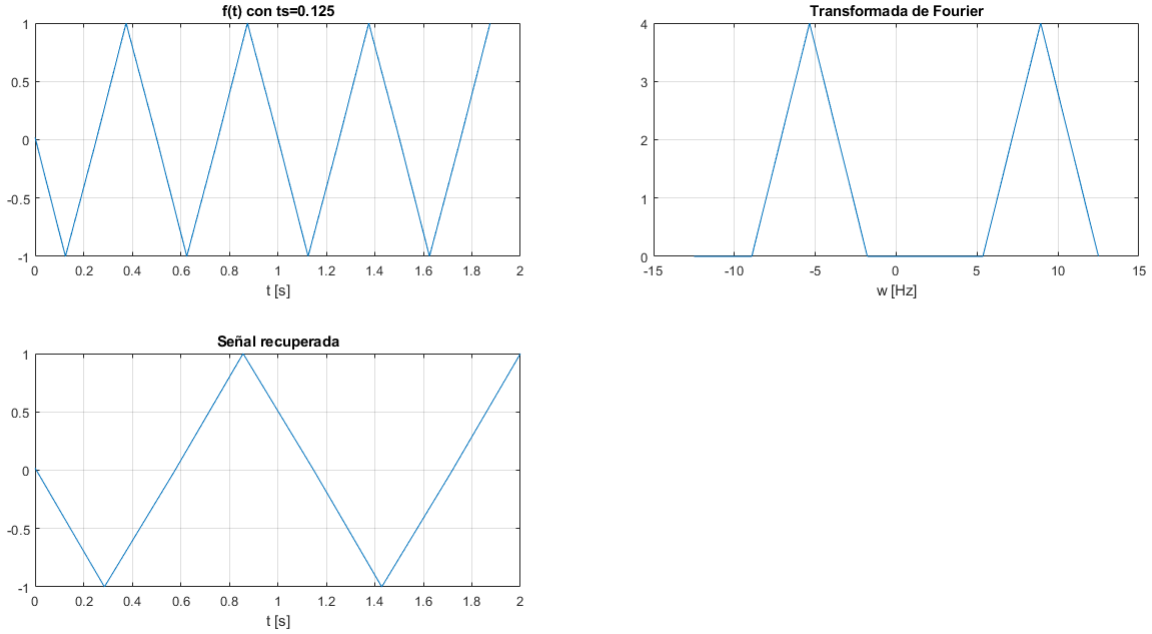

Figura 24: $f_s = 8Hz$

Código:

```
close all
clear all

%Tiempo
ts=[1/100 , 1/35 , 1/30 , 1/25 , 1/20 , 1/15 , 1/10 , 1/8];
n=800;

for i=1:length(ts)
t=0.0001:ts(i):2;


%SENALES MUESTREADAS

%f1= sin(2*pi*10*t); %Tiempo continuo
%f1= sin(2*pi*20*t);
f1= sin(2*pi*30*t);


% TRANSFORMADA DE FOURIER DE LAS SENALES

F1=0;
%F2=0;
%F3=0;

F1=fft(f1,1/ts(i));

invFI=ifft(F1);
w= linspace(-25*pi,25*pi,1/ts(i));

figure(i)
tiledlayout('flow')
% Top plot
nexttile
plot(t,f1)
title(strcat('f(t) con ts=',num2str(ts(i))))
grid on
xlabel('t [s]')

% Bottom plot
nexttile
plot(w/(2*pi),abs(F1))
title('Transformada de Fourier')
grid on
xlabel('w [Hz]')

t=linspace(0.0001,2,1/ts(i));
% Top plot
nexttile
plot(t,invFI)
title('Senal recuperada')
grid on
xlabel('t [s]')
end

```