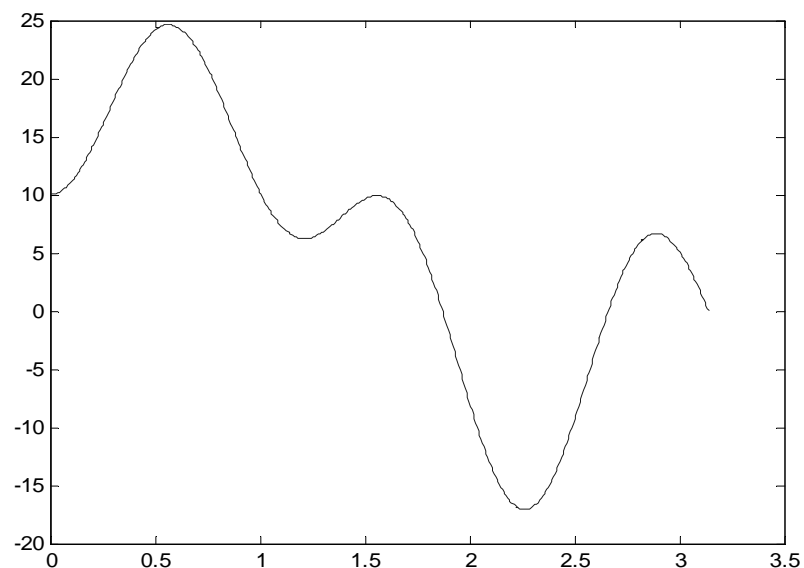


Resolução do Trabalho n.º 2 de PDS – 2001/02**Trabalho 1**

```
function fir2;  
% Computes Amplitude response Hr(w) of a Type-2 LP FIR filter  
%-----  
% Hr = Amplitude Response  
% w = 500 frequencies between [0 pi] over which Hr is computed  
% b = Type-2 LP filter coefficients  
% L = Order of Hr  
% h = Type-2 LP filter impulse response  
%  
% O filtro é do tipo 2 porque tem resposta impulsional com simetria positiva  
(h(n)=H(N-1-n)) e tem comprimento par  
  
clear  
  
h=[-4,1,-1,-2,5,6,6,5,-2,-1,1,-4];  
M = length(h);  
L = M/2;  
b = 2*[h(L:-1:1)];  
n = [1:1:L];  
n = n - 0.5;  
w = [0:1:500]*pi/500;  
  
Hr = cos(w*n)*b';  
plot(w,Hr)
```

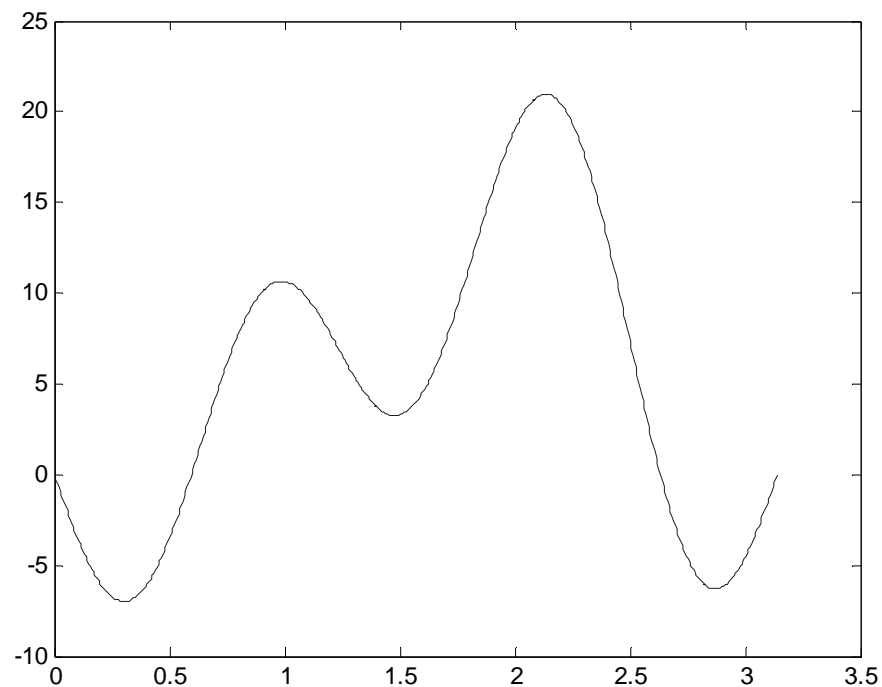
O resultado da execução deste programa é:



Trabalho 2

```
function fir3;  
% Computes Amplitude response Hr(w) of a Type-3 LP FIR filter  
%-----  
% Hr = Amplitude Response  
% w = 500 frequencies between [0 pi] over which Hr is computed  
% c = Type-3 LP filter coefficients  
% L = Order of Hr  
% h = Type-3 LP filter impulse response  
%  
% O filtro é do tipo 3 porque tem resposta impulsional com simetria negativa  
{h(n) = -h(N-1-n)} e tem comprimento impar  
  
clear  
  
h=[-4,1,-1,-2,5,0,-5,2,1,-1,4];  
M = length(h);  
L = (M-1)/2;  
c = [2*h(L+1:-1:1)];  
n = [0:1:L];  
w = [0:1:500]*pi/500;  
  
Hr = sin(w*n)*c';  
  
plot(w,Hr)
```

O resultado da execução deste programa é:



Trabalho 3

```
function fir4;  
% Computes Amplitude response Hr(w) of a Type-4 LP FIR filter  
%-----  
% Hr = Amplitude Response  
% w = 500 frequencies between [0 pi] over which Hr is computed  
% d = Type-4 LP filter coefficients  
% L = Order of Hr  
% h = Type-4 LP filter impulse response  
%  
% O filtro é do tipo 4 porque tem resposta impulsional com simetria negativa  
{h(n) = -h(N-1-n)} e tem comprimento par  
  
clear  
  
h=[-4,1,-1,-2,5,6,-6,-5,2,1,-1,4];  
M = length(h);  
L = M/2;  
d = 2*[h(L:-1:1)];  
n = [1:1:L];  
n = n - 0.5;  
w = [0:1:500]*pi/500;  
  
Hr = sin(w*n)*d';  
  
plot(w,Hr)
```

O resultado da execução deste programa é:

