FFT

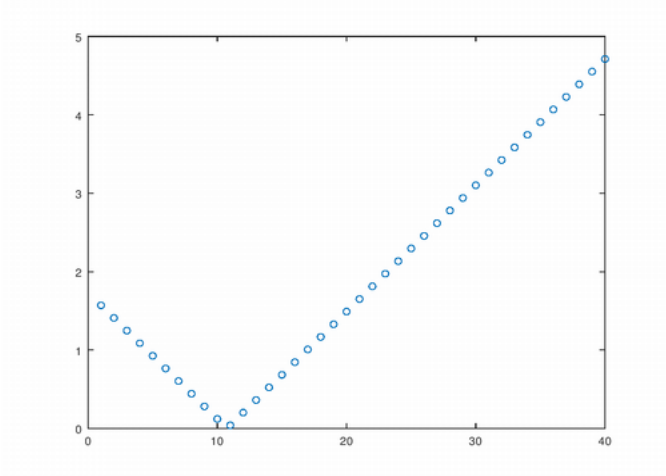
- FFT na dimenzi $N=4$

```
h=[1;2;3;5]

h =

   1
   2
   3
   5


fft(h)

ans =

   11 +  0i
   -2 +  3i
   -3 +  0i
   -2 -  3i


w4=exp(-I*2*pi/4);
w2=exp(-I*2*pi/2);
Hxx=[h(1);h(3);h(2);h(4)]

Hxx =

   1
   3
   2
   5


Hx=[Hxx(1)+w2^0*Hxx(2);Hxx(1)+w2^1*Hxx(2);Hxx(3)+w2^0*Hxx(4);Hxx(3)
+w2^1*Hxx(4)]

Hx =

   4.0000 + 0.0000i
  -2.0000 - 0.0000i
   7.0000 + 0.0000i
  -3.0000 - 0.0000i
```

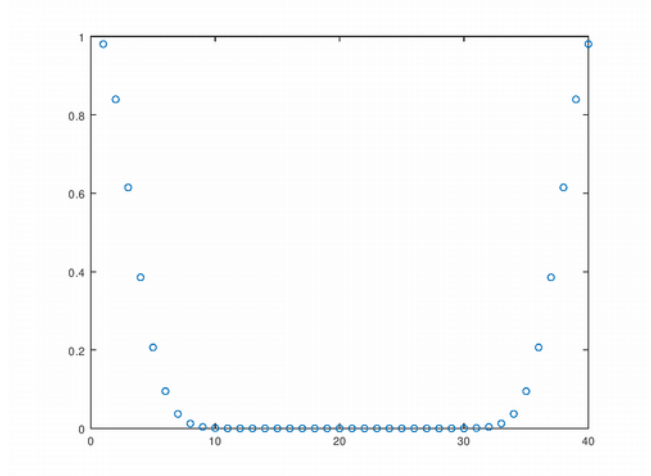
```
H=[Hx(1)+w4^0*Hx(3);Hx(2)+w4^1*Hx(4);Hx(1)+w4^2*Hx(3);Hx(2)
+w4^3*Hx(4)]
```

```
H =

   11.0000 +  0.0000i
   -2.0000 +  3.0000i
   -3.0000 -  0.0000i
   -2.0000 -  3.0000i
```

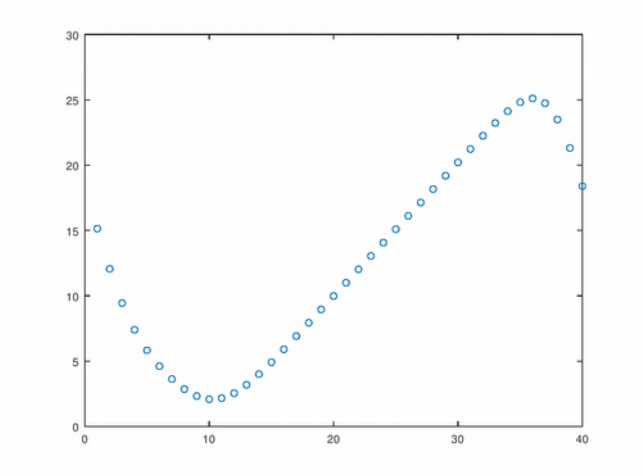
- konvoluce



$g(t)$

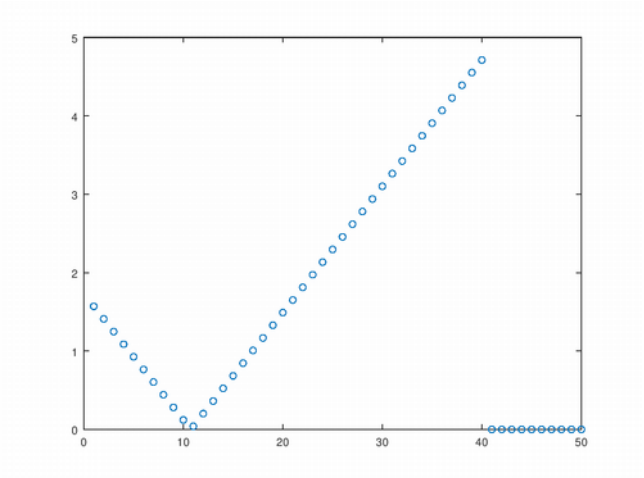


$h(t)$

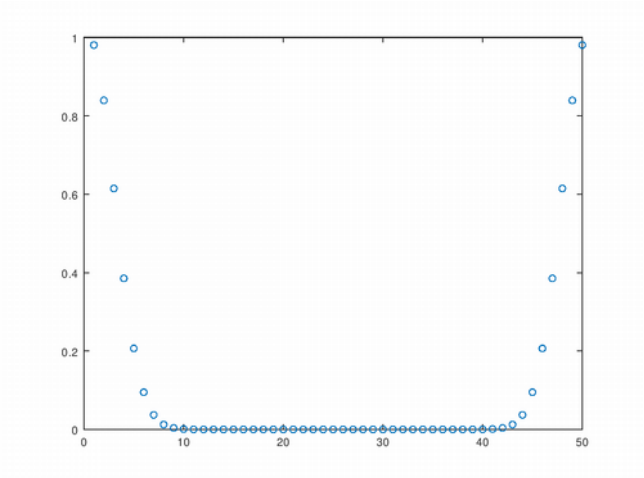


$g(t)*h(t)$

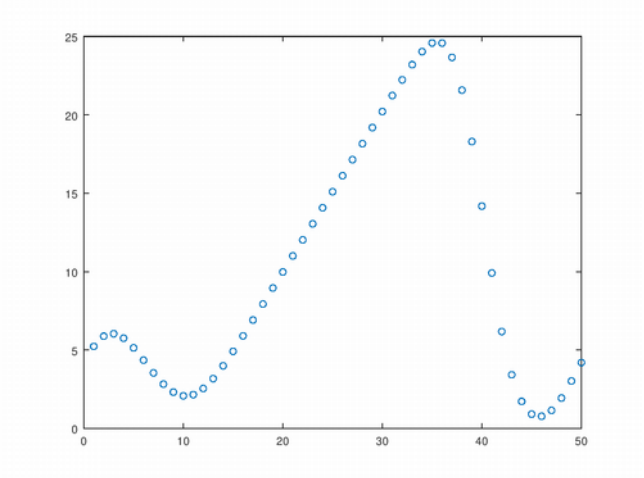
- konvoluce s nastavením nulami (zero padding)



$\widetilde{g}(t)$



$\widetilde{h}(t)$



$\widetilde{g}(t) * \widetilde{h}(t)$