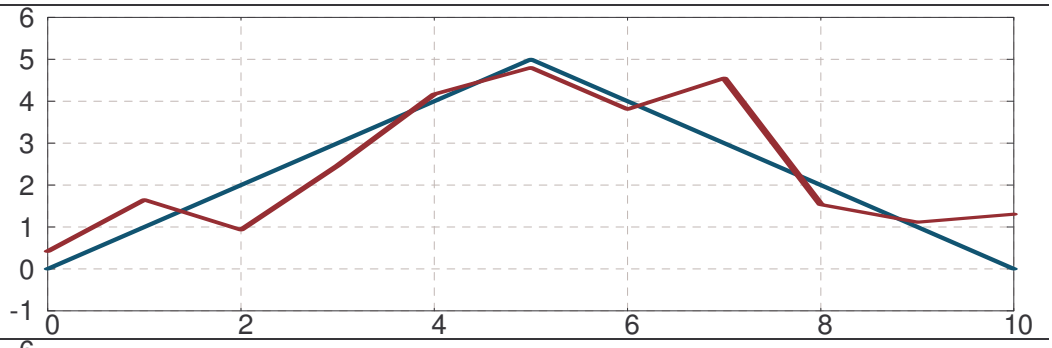
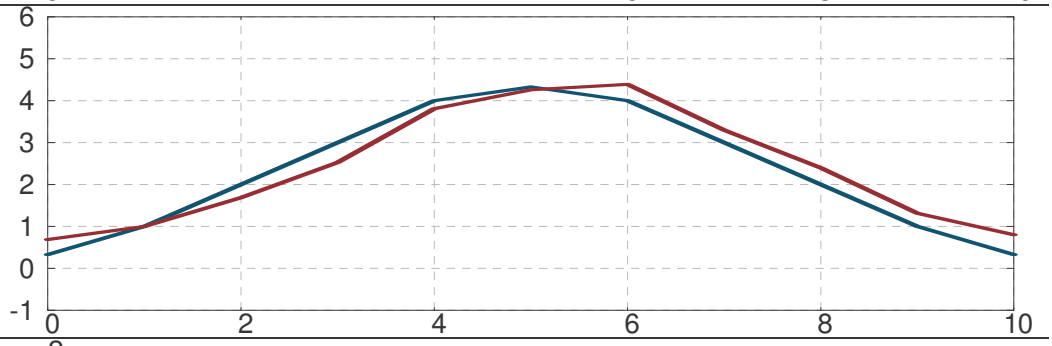
ELG7173 – Linear and Nonlinear filtering

```
signal=[0:5 4:-1:0];
sig_n = signal +
  randn(size(signal));
plot([signal;sig_n ]')
```

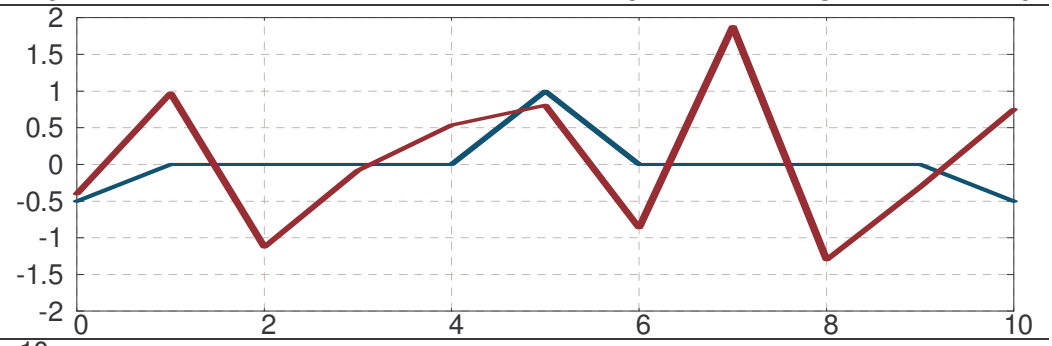



```
conv_kernel= [1,1,1]/3;
filt_sig= conv2(signal,
   conv_kernel,'same');
filt_sign= conv2(sig_n,
   conv_kernel,'same');
plot([filt_sig;filt_sign]
```



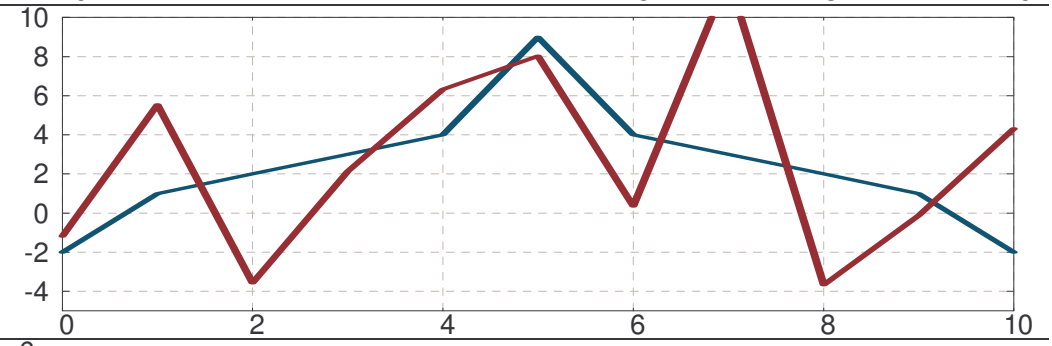

```
conv_kernel= [-.5,1,-.5];

Note sum(conv_kernel)
==0
```




```
conv_kernel= [-2,5,-2];

Note sum(conv_kernel)
==1
```




```
plot([medfilt(signal,3);
      medfilt(sig_n,3)]')

function y=medfilt(x,n);
ll= length(x);
idx=ones(n,1)*(0:ll-1)+
 ((1:n)'-n/2)*ones(1,ll);
idx = idx.*(idx>1 &
idx<ll) + 1*(idx<=1) +
   ll*(idx>=ll);
yy=reshape(x(idx),n,ll);
y=median(yy);
```