

Example 8-10: Dereverberation of a Signal.

Purpose:

The signal shown was produced by reverbing a short-duration signal with reflection coefficient $r = 0.6$ and time delay $M = 1$. Compute the original signal.

Inputs:

r =reflection coefficient.
 X =short-duration signal.
 M is assumed to be one.

Outputs:

Reverbed and dereverbed signals.

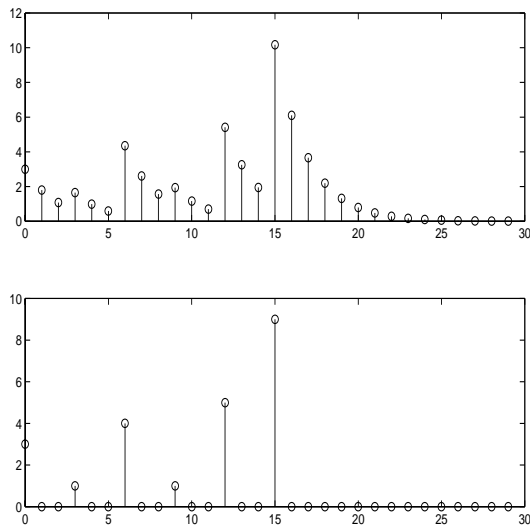


Figure 1: Reverbed (top) and dereverbed (bottom) signals.

Comments:

- X should be mostly zeros for effect.
- X used consists of the digits of π .

Program:

```
X=[3 0 0 1 0 0 4 0 0 1 0 0 5 0 0 9];  
r=0.6;H=r.^[0:29];Y=conv(H,X);  
Z=filter([1 -r],[1],Y);  
subplot(211),stem([0:29],Y(1:30))  
subplot(212),stem([0:29],Z(1:30))
```