```
clear;
clc;

% data for problem on bandlimited signal recovery from zero crossings
n = 2048;
f_min = 4;
B = 9;
s = [-1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 1 1 1 1 1 1
y = [-1.0094 -0.9767 -0.9433 -0.9090 -0.8740 -0.8383 -0.8019 -0.7648 -0.7271 -0.6888 -0.6499 -0

C = zeros(n,B);
CS = zeros(n,B);
for j = 1:B
    C(:,j) = cos(2*pi/n * (f_min+j-1) * (1:n) );
    CS(:,j) = sin(2*pi/n * (f_min+j-1) * (1:n) );
end
A = [C CS];
```

```
% Begin Solving with CVX MATLAB:

cvx_begin quiet
    variable x(2*B)
    % f0 --> The objective function
    minimize norm( A * x )
    % Here we put the constraints:
    subject to

    s' * (A*x) == n
    s .* (A*x) >= 0

cvx_end
y_tilde = A*x;

disp('Error After recovery')
```

```
Error After recovery
```

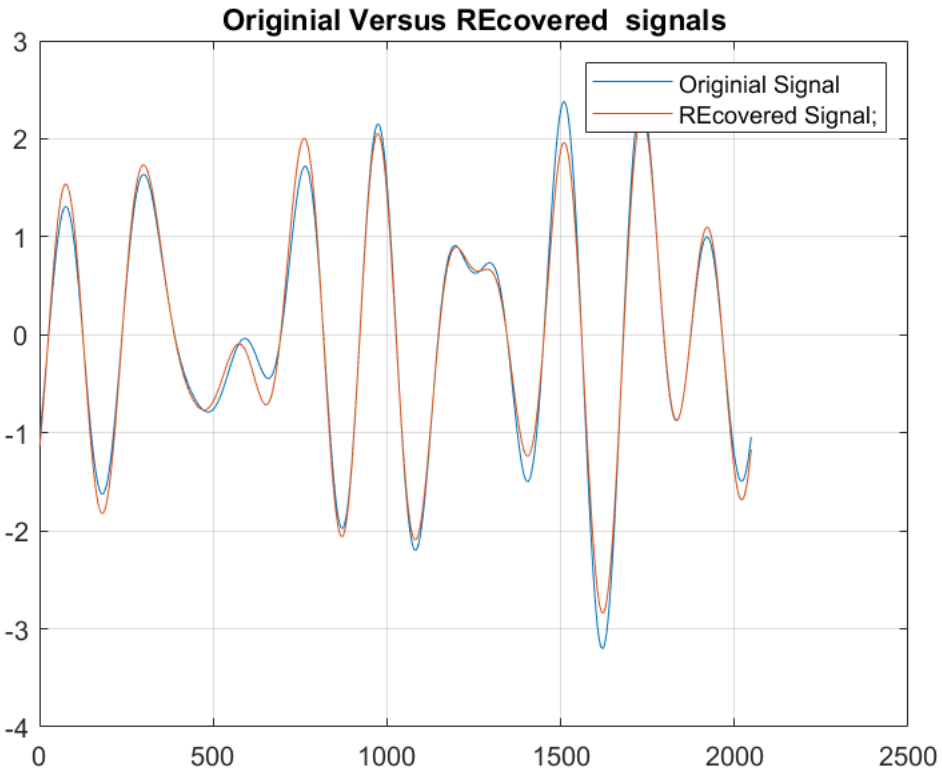
```
disp( norm(y - y_tilde) / norm(y));
```

```
    0.1208
```

```
figure()

plot(y)
hold on
plot(y_tilde)
legend('Originial Signal', ...
    'REcovered Signal;');
title('Originial Versus REcovered  signals');
```

```
grid on
```


Originial Versus REcovered signals
Originial Signal
REcovered Signal;
3
2
1
0
-1
-2
-3
-4
0
500
1000
1500
2000
2500