```
%%Lab10part1
t = [0:.1:2*pi];
sig = sin(t);
partition =[-1:.2:1];
codebook = [-1.2:.2:1];
[index,quants,distor]= quantiz(sig,partition,codebook);
[partition2,codebook2]= lloyds(sig,codebook);
[index2,quant2,distor2]= quantiz(sig,partition2,codebook2);
[distor,distor2]

plot(t,sig,'linewidth',2)
hold all

plot(t,quants,'linewidth',2)
hold all

plot(t,quant2,'linewidth',2)
grid on
xlim([0 2*pi])
xlabel('Time(seconds)')
ylabel('Original/Quantized Signals (volts)')

disp('Inital vs Optimized Partitions')
[partition(:) partition2(:)]

disp('Inital vs Optimized Codebooks')
[codebook(:) codebook2(:)]


ans =

    0.0148    0.0022

Inital vs Optimized Partitions

ans =

   -1.0000   -0.9396
   -0.8000   -0.8382
   -0.6000   -0.6897
   -0.4000   -0.5051
   -0.2000   -0.3133
         0   -0.1094
    0.2000    0.1093
    0.4000    0.3132
    0.6000    0.5037
    0.8000    0.6965
    1.0000    0.8762

Inital vs Optimized Codebooks

ans =
```
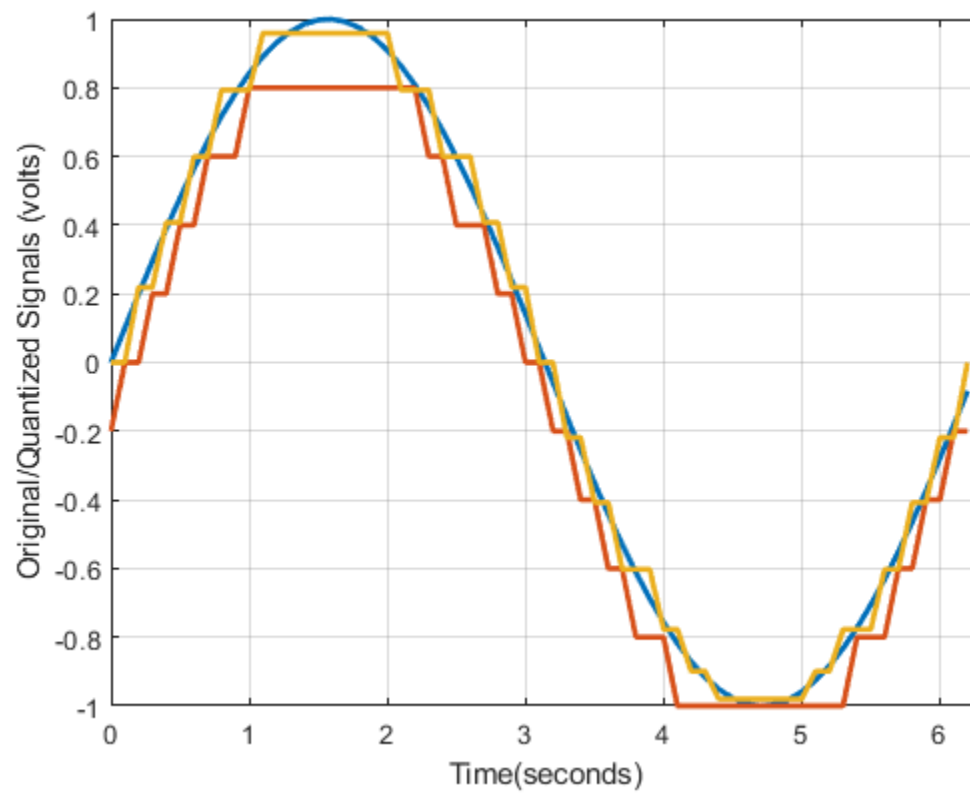
```
-1.2000   -0.9800
-1.0000   -0.8993
-0.8000   -0.7771
-0.6000   -0.6023
-0.4000   -0.4079
-0.2000   -0.2187
      0   -0.0000
 0.2000    0.2186
 0.4000    0.4078
 0.6000    0.5997
 0.8000    0.7933
 1.0000    0.9590
```



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