Signal Reconstruction

Problem 8.5

Contents

- Setup
- Estimating A
- Estimating signal
- sampmat func

Setup

```
clear;
close all;
load('hw8problem5.mat');
M = length(y);
N = 51;
B = (N-1) / 2;
A = zeros(M, N);
t = [0:0.001:1];
f = zeros(1, length(t));
```

Estimating A

```
A = sampmat(samptimes, N);
```

Estimating signal

```
x = pinv(A)*y;
A = sampmat(t, N);
f = A * x;
figure;
hold on;
plot(t, real(f));
plot(samptimes, y, '*-');
legend('reconstructed', 'original');
```

sampmat func

```
function A = sampmat(samptimes, N)
    samptimes = samptimes(:);
    M = length(samptimes);
    A = zeros(M, N);
    B = (N-1)/2;
    Q = samptimes*(-B:B);

    A = exp(1j*2*pi*Q);
end
```

Published with MATLAB® R2017a