# Project 1

Part a

The MatLab commands I used are:

```
n  = 0:1:9;
x  = sin(2*pi*n/5);
x2 = sin(4*pi*n/5);
x4 = sin(8*pi*n/5);
x6 = sin(12*pi*n/5);
subplot(4,1,1); stem(n, x);
subplot(4,1,2); stem(n, x2);
subplot(4,1,3); stem(n, x4);
subplot(4,1,4); stem(n, x6);
```

The plots below are x, x2, x4, and x6 top to bottom. The plots
for x and x6 are identical because they are discrete functions
of n, and their frequencies are separated by an integer multiple
of 2*pi (the integer in this case being 1).
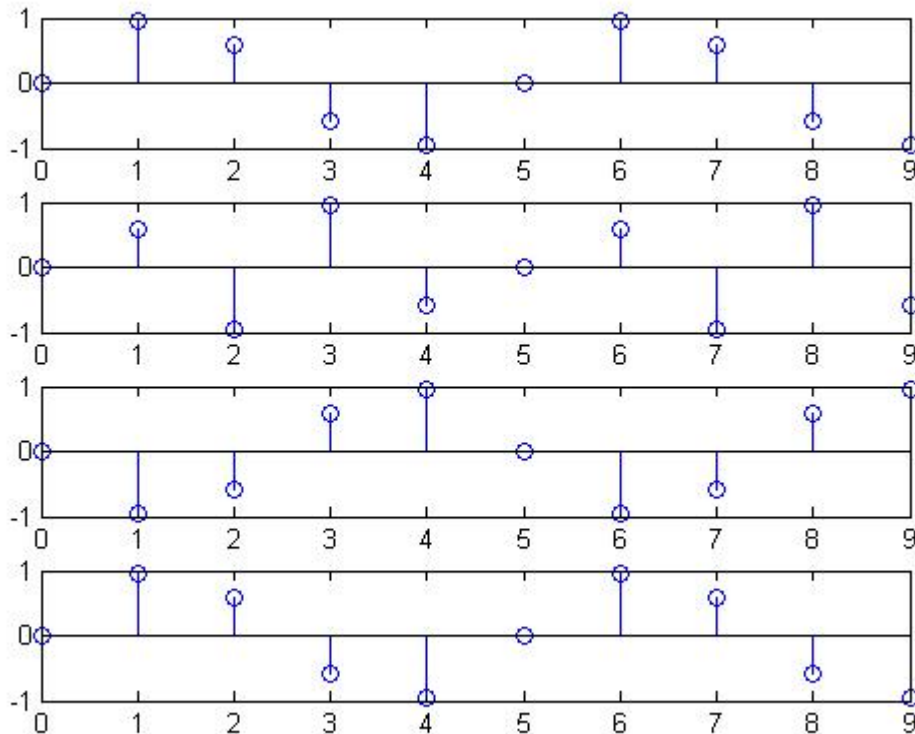
Part b

The MatLab commands I used are:

```
x = [1 1 1 1 1];
n = [0 1 2 3 4 5 6];
h = 2.^n;
y = conv(x, h);
n = 0:1:10;
n0 = -10:1:-1
n1 = 11:1:20;
n = cat(2, n0, cat(2, n, n1));
y0 = [0 0 0 0 0 0 0 0 0 0];
y = cat(2, y0, cat(2, y, y0));
stem(n, y);
```

I plotted the time axis from n = -10 to 20.