Part 2, question 1:

```
clear;
close;
home;

function retval = square_wave(x)
  n_max = length(x);
  retval = zeros(size(x));
  for i=[1:n_max]
    n = floor(x(i)/pi);
    if(mod(n,2))
      retval(i)=0;
    else
      retval(i)=1;
    endif
  endfor
endfunction

function retval = tri_wave(x)
  n_max = length(x);
  retval = zeros(size(x));
  for i=[1:n_max]
    n = floor(x(i)/pi);
    if(mod(n,2))
      retval(i)=1-(x(i)-n*pi)/pi;
    else
      retval(i)=(x(i)-n*pi)/pi;
    endif
  endfor
endfunction

f = 400.0;
T = 1/f;
fs = 8000.0;
dt = 1/fs;
t_start = dt;
t_end = 10*T;
t = t_start:dt:t_end;
x = 2*pi*f*t;

subplot(2, 2, 1)
plot(t, square_wave(x), '-')
axis([-dt 10*T+dt -1 2])
```

```
subplot(2, 2, 2)
plot(t, tri_wave(x), '-')
axis([-dt 10*T+dt -1 2])
subplot(2, 2, 3)
r = 0:0.001:2;
plot(r, randn(size(r))*0.1+1.0)
```