Plot N sine waves on a single plot

In this example, we plot lots of sine waves on a single plot. Rather than including all the functions in the **`plot(x1, y1, x2, y2, ...)`** command, we use the **`hold all`** command. Normally, the **`plot`** command creates a new graph each time it is called. When **`hold all`** is used, the new plot is drawn over the previous plot.

nSineWaves.m

```
% nSineWaves.m - Plot N sine waves on a single graph
n = 20;                  % sets number of waves to plot
x = [0:pi/100:4*pi];     % defines x values on interval (0, 4pi)

for i=1:n                        % loop through n times
    y = i*sin(x+2*i*pi/n);       % define nth sine wave
    plot(x,y)                    % plot to screen
    hold all                     % allow multiple plots to same graph
end

% Label axes
xlabel('x')
ylabel('Wave height')
title('N Sine Waves', 'FontSize',14)

% Set axis limits for plot
axis([0 4*pi -(n+1) (n+1)]);
```